



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT:	PEDZIWIATR, JOSEPH ET AL.	EXAMINER:	IQBAL, KHAWAR
SERIAL NO.:	10/043,797	GROUP:	2686
FILED:	JANUARY 11, 2001	CASE NO.:	CE08185R
TITLED:	HIGH INTEGRITY RADIO ACCESS NETWORK CLIENT REALLOCATION IN A WIRELESS COMMUNICATION NETWORK		

Motorola, Inc.
Corporate Offices
1303 E. Algonquin Road
Schaumburg, IL 60196
July 5, 2005

Declaration Under 37 CFR §1.131

1. We, Joseph Pedziwiatr, Paul Steinberg, William S. Pierce, Richard James Malcolm, Daniel Francis Tell and Brian Jack Moore, are inventors of the present application and hereby make this declaration.
2. This declaration establishes the completion of the invention in this application in the United States, at a date prior to June 29, 2001 that is the effective date of United States Patent Application Publication No. 2003/0003919 A1 to Bemng et al., which was cited by the Examiner.
3. The claimed subject matter of this patent application was the subject of a written disclosure prepared after conception and wherein the written disclosure was submitted as a Disclosure for Patent Committee to the assignee, Motorola, Inc. for the purpose of documenting, considering and maintaining invention disclosures. The Disclosure for Patent Committee is attached as Exhibit A.
4. The conception date of May 21, 1999, which is the earliest verifiable date an individual who is a non-innovator witnessed the claimed subject matter, is prior to June 29, 2001.
5. On or about June 24, 1999, Motorola, Inc. decided to pursue patent protection on the written disclosure previously submitted, and that thereafter, in due course, a patent application was prepared and filed in the United States Patent Office on January 11, 2001.

6. Prior to June 29, 2001 to January 11, 2001, we exercised due diligence to prepare and file the pending patent application. During this time period, we worked toward preparing the pending patent application for filing with the United States Patent and Trademark Office.

7. All of the above statements made of our own knowledge are true and all statement made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that willful false statements may jeopardize the validity of this application or any patent issuing thereon.

Joseph Pedziwiatr Date _____

Paul Steinberg Date _____



William S. Pierce Date July 5, 2005

Richard James Malcolm Date _____

Daniel Francis Tell Date _____

Brian Jack Moore Date _____



#4

Motorola Confidential Proprietary

DISCLOSURE FOR PATENT COMMITTEE
SUBMITTED PURSUANT TO EMPLOYMENT AGREEMENT
FOR INSTRUCTIONS FOR COMPLETION REFER TO
DISCLOSURE INSTRUCTION PROCEDURE

Inventor(s) will not fill in

Operation

DISCLOSURE NO. (E08185R) DATE 4/27/99

Patent Committee Action

Inventor(s) Name(s)

Pedziwiatr, Joseph Pierce, Bill
Steinberg, Paul Malcolm, Rich
 Teel, Don

Moore, Dunn : Spear, John
 Spear, Steve

Inventor must fill in Items 1 thru 13. Items 2 to 5 may require extra sheets.

BE SURE that all attachments are signed and dated by both the inventor(s) and witnesses.

1. Name of the invention. (Limit to ten word.)
Seamless High Integrity Radio Access Client Handoff in a Wireless Network
2. State the problem(s) solved by the invention.
See attached.
3. Describe the invention, including its operation, purpose and environment. (Use separate sheets as required).
See attached.
4. List the closest known technology (attach article, patent, catalog sheet or other documentation).
See attached.
5. Improvement(s) over known technology.
See attached.
6. What new elements (e.g. components, circuits, process steps) or combination of known elements or software algorithm produced the improvement?
See attached.
7. What are the potential applications for use of this invention?
Anyone deploying CDMA systems (Lucent, LG, Samsung, Nortel, etc.)

8. Conception date? (Attach earliest log sheets, drawings, etc., to support dates).
9. To whom did you first disclose this invention? Name: Date:
10. Date the device was first built and tested.
Present location of the device? Not currently implemented.

DETERMINATION OF LEGAL INVENTORSHIP WILL BE BY THE PATENT DEPARTMENT.

Inventor's signature (IMPORTANT - YOU MUST USE YOUR FULL NAME) - NO INITIALS

11. Inventor's Full Name: (Type)	Signature	Date	Social Security No.
Joseph Pedziwiatr	<i>Joseph Pedziwiatr</i>	4/27/99	334-60-2270
Home Address: Street	City	State	Country Zip Code
640 S. 7th	La Grange	IL	USA 60525
Citizen of (i.e. U.S., Germany, etc.)	Dept. No. 847- Phone	Room No.	Employee Status
USA	BC573 632-5098	IL7512	<input checked="" type="checkbox"/> Permanent <input type="checkbox"/> Contractor
Inventor's Immediate Supervisor	Dept. No.	Phone	Social Security No.
Paul Steinberg	BC573	2-5867	10025887

C dblt
Jol

12. Inventor's Full Name: (Type) Paul Steinberg Signature P.D.S. Date 5/21/99 Social Security No. 323-42-5257
 Home Address: Street _____ City _____ State _____ Country _____ Zip Code _____

Citizen of (i.e. U.S., Germany, etc.)	Dept. No.	Phone	Room No.	Employee Status
	2-5867			<input type="checkbox"/> Permanent <input type="checkbox"/> Contractor
Inventor's Immediate Supervisor	Dept. No.	Phone	Social Security No.	

13. Inventor's Full Name: (Type) William S. Pierce Signature Will S. Pier Date 5/21/99 Social Security No. 340-66-5315
 Home Address: Street 8 Dryden Court City B1568 Algonquin State IL Country USA Zip Code 60102
 Citizen of (i.e. U.S., Germany, etc.) Dept. No. BL 568 Phone 632-7413 Room No. 3C5 Employee Status
 Permanent Contractor
 Inventor's Immediate Supervisor Dept. No. _____ Phone _____ Social Security No. _____

Witness signatures (TWO WITNESSES ARE REQUIRED). Witness must sign and date this form and all attachments.
 THE WITNESSES IN SIGNING THIS FORM ATTEST TO THE FACT THAT THEY UNDERSTAND THE INVENTION.

14. Witness Name: (Type) LARRY D. JIVEC Signature Larry D. Jivec Date 20 May 99 Phone 847 632-5259

15. Witness Name: (Type) Donald A. Wilk Signature Donald Wilk Date 20 May 99 Phone 847 632-6103

Items 16 thru 24 are to be filled in by the ENGINEERING/PRODUCT MANAGER or above.

THE MANAGER IN SIGNING THIS FORM ATTESTS TO THE FACT THAT HE UNDERSTANDS THE INVENTION.

16. What product will this invention be used in? (No code names -- use brief description if necessary)
 Aerolon applications.

17. When (was) (will) the first offer for sale of a product incorporating this invention (be) made?
 Date: _____

18. When is the estimated shipping date?

19. When (was) (will) the first disclosure outside of Motorola (be) made? How and to whom? Nondisclosure
 agreement signed? State title and date of publication, if any.

20. What is the market for products incorporating this invention? Be specific and quantitative.
 GSM/CDMA/UMTS Cellular Systems, GSM/CDMA/UMTS Enterprise Wireless Systems
 GSM/CDMA/UMTS Wireless Local Loop Systems

21. Who are the potential competitors? What is the possibility this invention will be used by competitors? Which
 ones?

Lucent, Samsung, LG, Nortel, Cisco, Ericcson, Nokia

22. Did this invention result from work on a development Contract? (YES) (NO) Contract No. _____
 Who was the contracting party?

23. Discuss the business impact that this invention will have on Motorola. Be specific and quantitative.

This invention provides a means to seamlessly move the bearer and control client functions from one Radio Access Network to another. The method uses bridging functions within the Core and RAN networks allowing for simultaneous high integrity connections between the existing and future RAN components through the move operation.

24. Manager's Name (Type) _____ Signature _____ Date _____ Dept. No. _____ Phone _____

DETERMINATION OF LEGAL INVENTORSHIP WILL BE MADE BY THE PATENT DEPARTMENT.

Inventor's signature (IMPORTANT -YOU MUST USE YOUR FULL NAME)--NO INITIALS--

11. Inventor's Full Name: Signature Date Social Security No.& Commerce ID
Richard James Malcolm *R. J. Malcolm* 4/20/98 351-50-4876 10040345
S-21-98

Home Address: Street City State Country Zip Code
625 Paxton Place Carol Stream IL USA 60188

Citizen of (i.e. U.S., Germany, etc.) Dept. No. Phone Mail drop & Post no. Employee Status
US BC568 2-6063 IL27 3-3c

Inventor's Immediate Supervisor Dept. No. Phone Social Security No.& Commerce ID
Dan Tell BD996 2-5301 350-42-1127 10039680

Motorola Confidential Proprietary Upon Completion

Page 2--Disclosure No. Motorola Confidential Proprietary Upon Completion

12. Inventor's Full Name: (Type) Signature Date Social Security No.& Commerce ID
Daniel Francis Tell *D. Francis Tell* 5-20-98 350-42-1127 10039680

Home Address: Street City State Country Zip Code
1533 Bowling Green Lake Forest IL USA 60045

Citizen of (i.e. U.S., Germany, etc.) Dept. No. Phone Mail drop & Post no. Employee Status
US BD996 2-5301 IL27 3-5C

Inventor's Immediate Supervisor Dept. No. Phone Social Security No.& Commerce ID
John Thode BD908 2-5322 10045518

13. Inventor's Full Name: (Type) Signature Date Social Security No. & Commerce ID
Paul Daniel Steinberg *P. Daniel Steinberg* 323-42-5257

Home Address: Street City State Country Zip Code
1200 Keim Trail Bartlett IL USA 60103

Citizen of (i.e. U.S., Germany, etc.) Dept. No. Phone Mail drop & Post no. Employee Status
USA BC573 2-5867 IL27 3N9

Inventor's Immediate Supervisor Dept. No. Phone Social Security No. & Commerce ID
John Cipolla BC573 2-5283 10041815

Inventor's Full Name: (Type) Signature Date Social Security No. & Commerce ID
Brian Jack Moore *Brian Jack Moore* 336-42-6399

Home Address: Street City State Country Zip Code
718 Bon Aire Drive Palatine IL USA 60067

Citizen of (i.e. U.S., Germany, etc.) Dept. No. Phone Mail drop & Post no. Employee Status
USA BD537 2-5266 IL27 AR3223

Inventor's Immediate Supervisor Dept. No. Phone Social Security No. & Commerce ID
Don Benkeser BD537 5-0137 316-54-3649

Inventor's Full Name: (Type)	Signature	Date	Social Security No. & Commerce ID		
John M. Sauer	<i>John M. Sauer</i>	<i>5/2/88</i>	312666792		
Home Address: Street 1066 Augustana Drive	City Naperville	State II	Country USA	Zip Code 60565	
Citizen of (i.e. U.S., Germany, etc.) USA	Dept. No. BC588	Phone 2-5707	Mail drop & Post no. IL-27	Employee Status <u>Permanent X Contractor</u>	
Inventor's Immediate Supervisor Bill Payne	Dept. No. BC279	Phone 5-5154	Social Security No. & Commerce ID 510-46-2151		
Inventor's Full Name: (Type) Stephen Lee Spear	Signature	Date	Social Security No. & Commerce ID 344-38-0983		
Home Address: Street 25 Williamsburg	City Skokie	State II	Country USA	Zip Code 60203	
Citizen of (i.e. U.S., Germany, etc.) USA	Dept. No. BC597	Phone 2-5251	Mail drop & Post no. AR3205	Employee Status	
Inventor's Immediate Supervisor Jerry Campbell	Dept. No. BC597	Phone 2-2162	Social Security No. & Commerce ID 510-46-2151	<u>Permanent X Contractor</u>	

DETERMINATION OF LEGAL INVENTORSHIP WILL BE MADE BY THE PATENT DEPARTMENT.

Inventor's signature (IMPORTANT --YOU MUST USE YOUR FULL NAME)--NO INITIALS--

11. Inventor's Full Name: Richard E. White Signature 05/20/00 Date 05/20/00 Social Security No.& Commerce ID 178-44-0863

Home Address: Street 980 Milford St City Cary State IL Country USA Zip Code 60013

Citizen of (i.e. U.S., Germany, etc.) USA Dept. No. BC279 Phone 5-0235 Mail drop & Post no. IL27 2A8 Employee Status

Inventor's Immediate Supervisor Bill Payne Dept. No. BC279 Phone 5-5155 Social Security No .& Commerce ID

Motorola Confidential Proprietary Upon Completion

Page 2--Disclosure No. Motorola Confidential Proprietary Upon Completion



Disclosure for Patent Committee

1. Name of the invention

Seamless High Integrity Radio Access Client Handoff in a Wireless Network

2. State the problem(s) solved by the invention

When a Mobile Termination device accesses the network requesting a desired service, a set of resources and path connections (Control and Bearer) are established within the Core and RAN network to support the requested service. This initial call configuration is assumed to be the optimum call configuration, given the state of the networks at the time of access. But, the dynamics of the RF environment along the mobility of the Mobile Terminating device, this initial call configuration may quickly become sub-optimum.

Functions within the RAN exist to optimize the RF paths. These RF path optimizations result in the establishment or removal of RAN based resources along with their associated control and bearer paths. As the Mobile Terminating device moves throughout the system, the crossing of RAN and CORE boundaries is inevitable. RAN boundary crossings are addressed within the Aerolon network via RAN to RAN interfaces. These interfaces allow Mobile Termination Device services to be provided across the boundaries. In general these interfaces allow for the allocation of BTS and RF resources along with a path for control messaging and bearer traffic delivery. But the support of calls across these interfaces may become sub-optimum over time. The control and bearer traffic paths may be over extended thus introducing unacceptable control latency and bearer traffic delays (including differential delays).

Typically, Radio Access Call Control and Bearer Path Management is centralized at a point within the RAN, referred to in general terms further as the RAN Session Client (RSC). (In particular to CDMA (Wide Band CDMA) the Selector Distribution Unit (SDU) and Radio Network Control Servers (RNCS) are instantiations of an RSC. Critical in maintaining an optimum call configuration is the location of the RSC. The RSC placement is critical, since the RSC serves as the termination point for the Core and BTS Bearer Path along with RAN Call Control. Locating the RSC to minimize bearer traffic delays and control latency is a crucial aspect of an optimum call configuration.

It is therefore beneficial from a Call Quality perspective to transfer the RSC from one physical point to another within the RAN Network.

Moving the physical location of the RSC is currently supported within some networks via intrusive manners. These procedures generally break and re-establish both Core and Radio connections, such as CDMA Hard Handoff. This not only impacts the quality of a given call but requires undesired interaction between the Core Network and MS on RAN boundary limitations. In addition, any modification to the Core and MS connections brings the potential for a failed connection.

Inventor John D. R. Date 5/10/99 Witness Tom J. L. Date 20 May 99

Inventor David J. M. Date 5-20-99 Witness D. J. M. / D. J. M. Date 20 May 99

Inventor P. D. O. Date 5/10/99

R. J. L.
F. J. R.

5/21/99

5/20/99

April 29, 1999

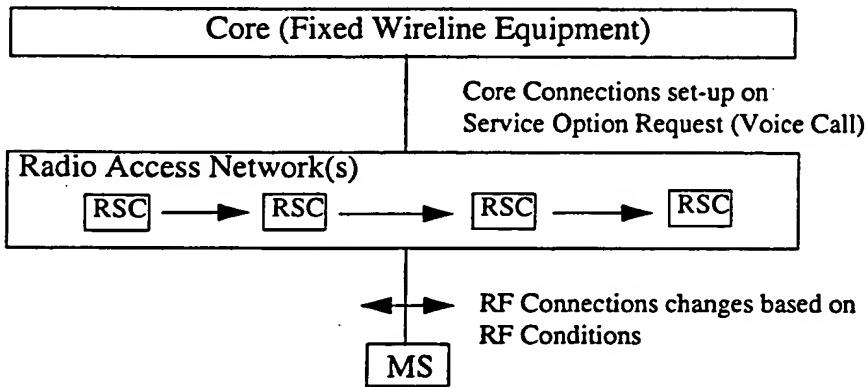
A method needs to be provided which provides a seamless RSC reallocation and which preserves the integrity of the call and connects.

3. Describe the invention, including its operation, purpose and environment.

The following invention specifies a method of moving the RSC within and across RANs in a seamless manner with high integrity. Figure 1, "Seamless RSC Handoff Illustration," on page 2 depicts the objective of this invention. The figure highlights the Fixed Equipment in the Core network and MS's connections unaffected by RSC reallocation within the Radio Access Network(s).

FIGURE 1.

Seamless RSC Handoff Illustration



In order provide for a seamless RSC handoff, two parallel paths from the BTS(s) and Core network are created. These connections involve two RSCs with the parallel paths supported via a RANS and Core "Y" bridging function. The "Y" bridging functions serve to provide for un-interrupted Bearer and Control for a given call session through an RSC handoff.

Figure 2, "System Bridging Functionality," on page 3 illustrates a Seamless High Integrity RSC handoff. The execution of such a procedure required the introduction of multiple bridging functions. The first bridging function, identified as the Core "Y" (a.k.a., Relay Client in Aerolon) provides a fixed termination point for fixed core based equipment (e.g., Circuit Gateway). Typically, these paths are formed at initial system access of the MSs. The Core "Y" provides bridging functions between the RSCs during the transitioning process. Further, the bridging function will allow for the integrity of the connection between the Core and new RSC prior to the bearer and control handoff within the RSC.

A RAN "Y" function is also required to shield the MS from the RSC transition. This RAN "Y" function supports the bridging and selection of control and bearer traffic from multiple RSCs. As with the Core "Y" functionality, the bridging function allows for the integrity check of the connections between the new RSC and BTS prior to the bearer and control handoff within the RSC. Typically, the multiple RAN "Y" connections will be established, since multiple BTSs are involved in a given call (CDMA Soft Handoff).

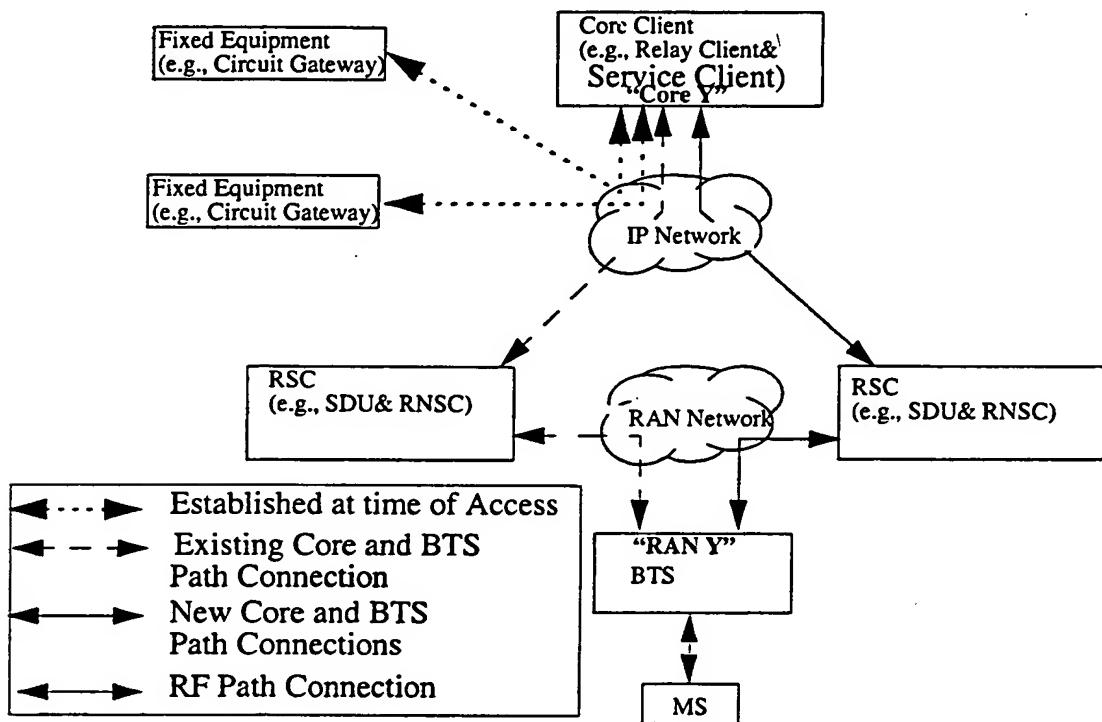
Inventor Will D. P. Date 5/16/99 Witness Tom O. L. Date 20. May - 99
Inventor John J. ... Date 5-2-91 Witness Frank M. ... Date 20 May 91
Inventor P.D.O.L. Date 5/21/99
Ridge Lee 5/21/99
Jeff Rose 5/20/99
Disclosure for Patent Committee April 29, 1999
Jordan 5/20/99 David Rodriguez 5/21/99
John E. ... 5/20/99

In most cases (e.g., CDMA), handing off of the RSCs involved the preservation of critical data of the Core and MSs. As an example, in a CDMA RSC handoff, the State of the MSs RF Layer 2 State information must be preserved. The relaying of this information between the two RSCs along with the coordination of the handoff would occur via either the Core "Y" or RAN "Y" function.

When all required information is obtained by the new RSC and Core and BTS paths are validated, the new RSC will take-over the control and bearer processing for the call. The old RSC connection will remain providing a graceful fallback in the case of a RSC handoff failure.

FIGURE 2.

System Bridging Functionality



The following set of illustrations depict the "Seamless High Integrity Radio Access Client Hand-off" in the context of CDMA.

Figure 3, "Intra-Core Streamline T=0," on page 5 illustrates a CDMA Call involved in an Inter-RAN soft handoff. CORE-1 and RAN-1 support the termination of the Core End-Points for a given Voice Call (Note multiple Core end-point may be involved). The Core network supports the Relay Client and the Service Client. Within RAN-1, the RNCS-1-1 supports the call control along with the selection function. The BTSs involved in the call are not contained within RAN-1 but are supported via bearer and control backhaul through the Inter-Vendor Soft Handoff (IV-SHO) inter-connect. At this time, a SDU/RNCS handoff (RSC Handoff) is desired.

Figure 4, "Intra-Core Streamline T=1-Establish RAN Connections," on page 6 illustrates the establishment of the SDU to BTS connection. An SDU is assigned in RAN-2 along with the BTS

Inventor William D. Rin Date 5/26/99 Witness Frank O'Brien Date 20. May - 99
 Inventor James M. Murphy Date 5-2-99 Witness John W. Helling Date 20. May 99
 Inventor Robert J. Cichy Date 5/26/99
James F. Nease Date 5/26/99

connections to the current serving BTSSs. This function requires the RAN "Y" in the BTS. Continuation of the procedure will not occur until the new SDU to BTS(s) path integrity is assured. RAN to RAN control communications are used to initiate and coordinate the new RAN configuration.

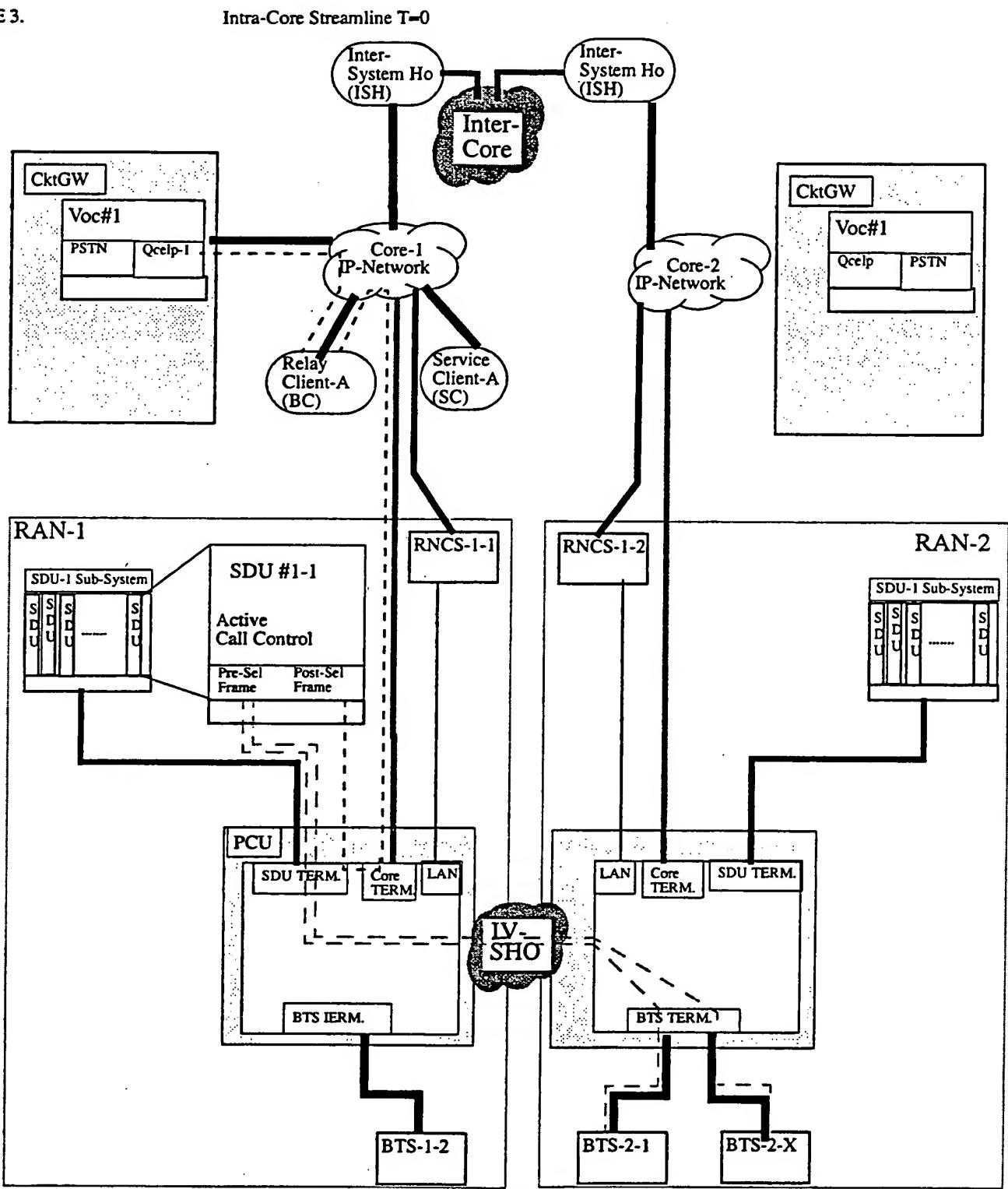
Figure 5, "Intra-Core Streamline T=2-Establish Core Connections," on page 7 illustrates the establishment of the Core Network. An interaction will take place between the Core networks to establish a Path to the new SDU. The Relay Client establishes a Core "Y" bridging functions allowing for the new SDU to verify its path connection integrity with the Relay Client. Continuation of the procedure will not occur until the new SDU to Relay Client path integrity is assured. At this time, the Core "Y" and RAN "Y" connections are established and the handing off of control and bearer management can be performed.

Figure 6, "Intra-Core Streamline T=3-Execute Handoffs," on page 8 illustrates the interaction between the RANs to obtain control information. It is expected to minimize latency that the required call data would be exchanged via the bearer path. The use of either the Core "Y" or RAN "Y" provides a channel between the two SDUs for control data exchange. Once the required data is obtained by the new SDU, the new SDU will take control of the call. The old SDU and its associated connections will remain as a fallback configuration.

Figure 7, "Intra-Core Streamline T=4-Tear-Down," on page 9 illustrates the teardown of the initial connections. This would be performed on the successful completion of the SDU handoff.

Inventor John D. Rice Date 5/10/99 Witness Frank J. Scherzer Date 10-May-99
Inventor James M. Potts Date 5-20-99 Witness Frank J. Scherzer Date 10-May-99
Inventor John D. Rice Date 5/2/99
K. J. Scherzer 5/4/99
Frank J. Scherzer 5/20/99
Disclosure for Patent Committee April 29, 1999 5/21/99
John D. Rice 5/21/99 Joseph Padhye 5/21/99
D. L. Scherzer 5/20/99

FIGURE 3.

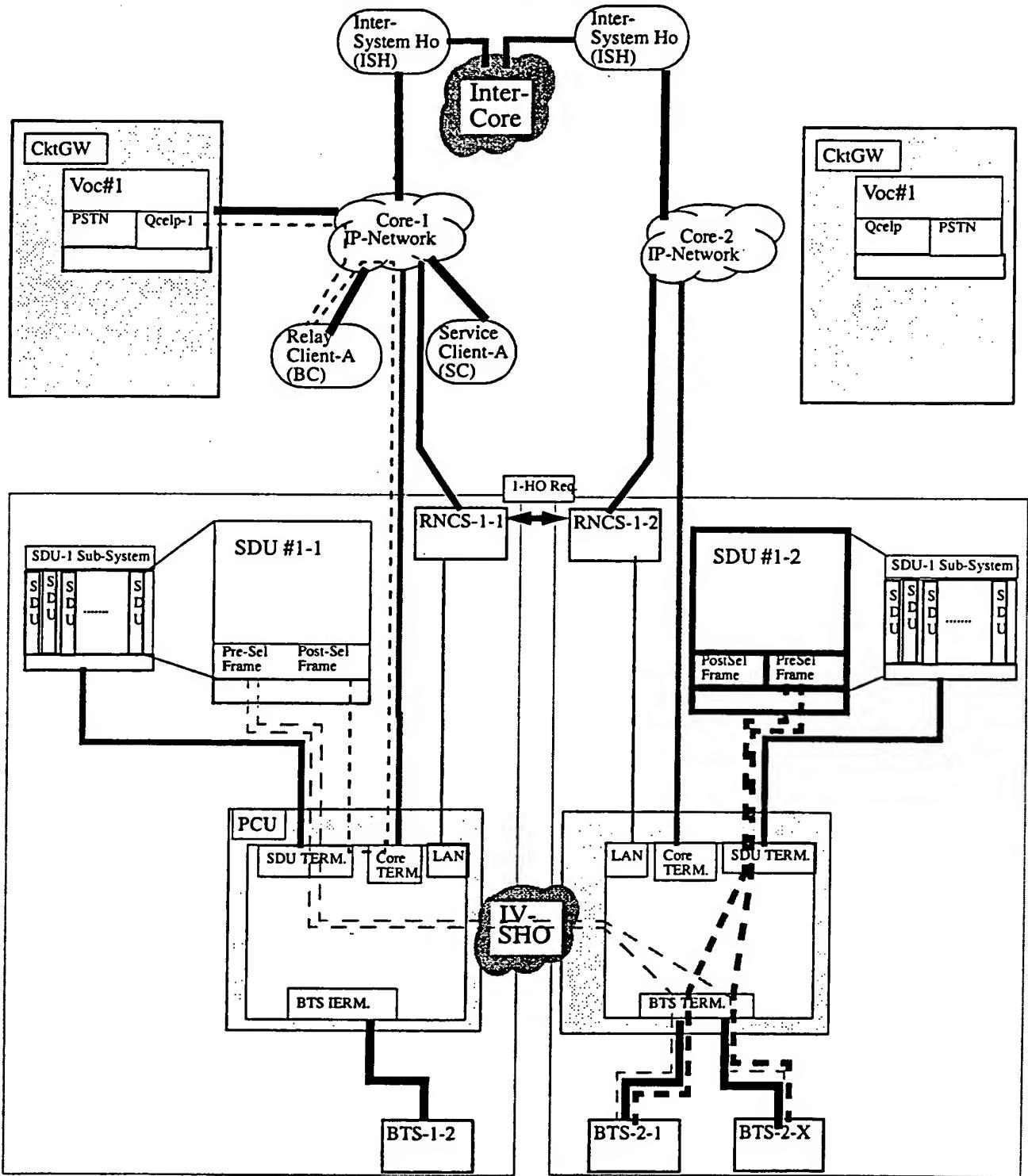


Inventor A.J. M. S.P. Date 5/10/99 Witness Tom O'Brien Date 20. May. 99
 Inventor John J. M. Date 5/20/99 Witness Donald W. Hickey Date 20 May 99
 Inventor P. J. D. Date 5/21/99
42 John St. 5/21/99
Brentwood 5/20/99

Disclosure for Patent Committee John Sauer Date 5/20/99 April 29, 1999 Joseph Reddywai Date 5/21/99
Zion F. Ladd 5/20/99

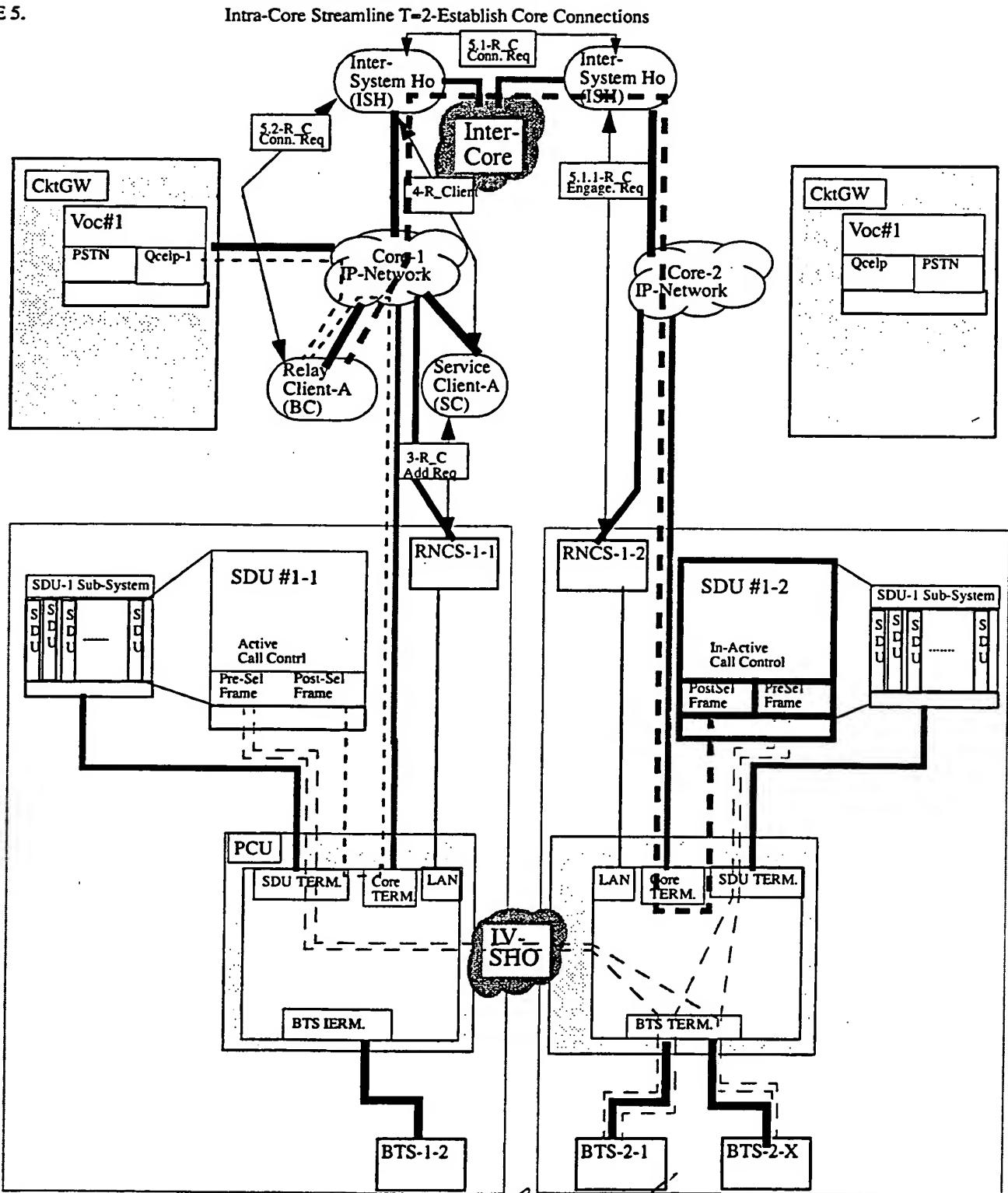
FIGURE 4.

Intra-Core Streamline T-1-Establish RAN Connections



Inventor A.J. Bhattacharya Date 5/10/99 Witness Long John Date 20-May-99
 Inventor Chandan Roy Date 5/10/99 Witness Vinod Mehta Date 20-May-99
 Inventor T.L. Datta Date 5/10/99
K.P. Jayaraman
Brijesh Kumar
 Disclosure for Patent Committee
J.M. Saha
April 29, 1999
5/10/99 Gopal Padhye 5/10/99

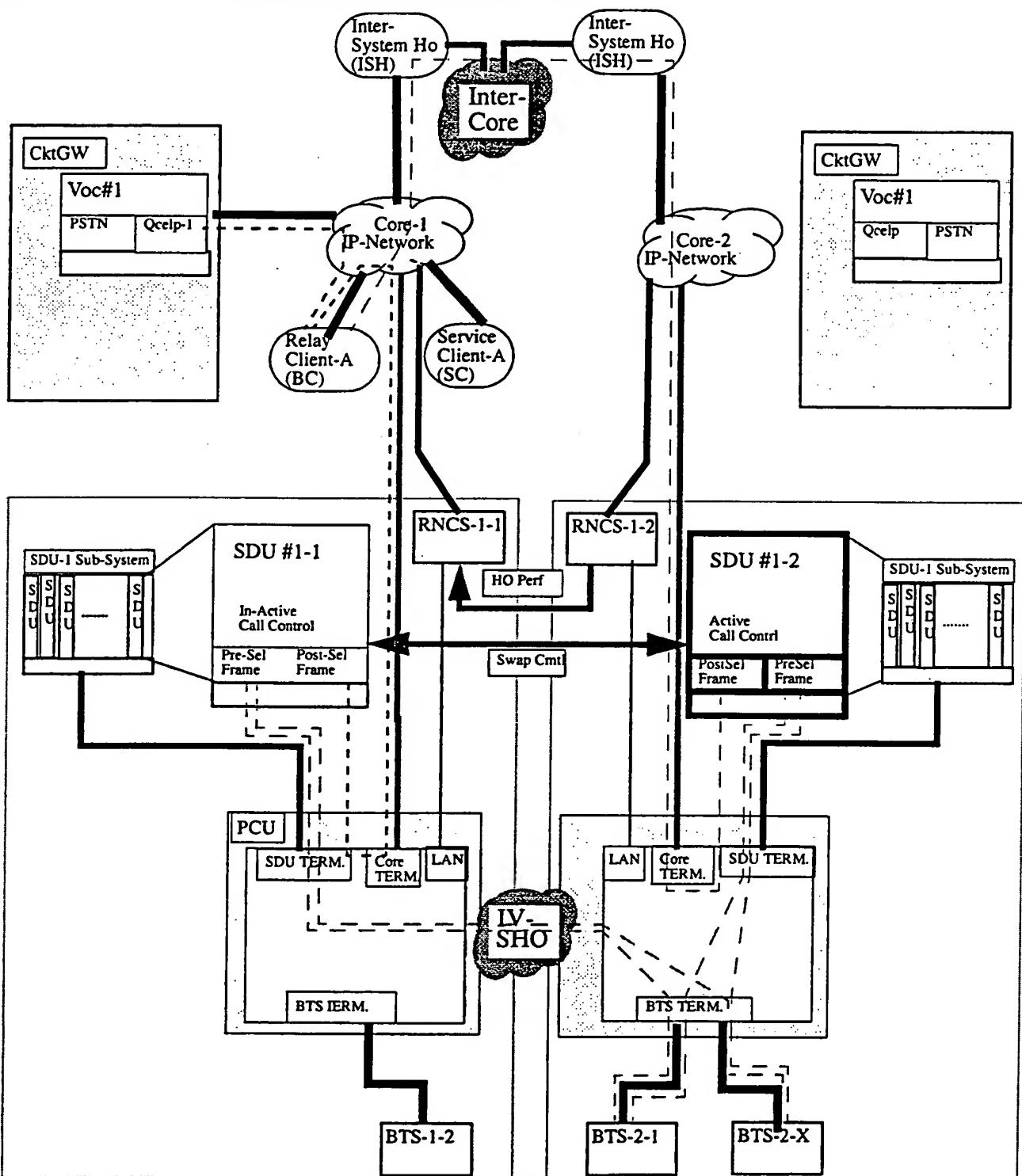
FIGURE 5.



Inventor John S. P. Date 5/10/99 Witness Long Chen Date 20. May - 99
 Inventor Long Chen Date 5/10/99 Witness Donald J. Gaskill Date 20. May - 99
 Inventor T. D. Ollie Date 5/10/99
Kiljan
B. van der
Wier
 Date 5/10/99
5/10/99
5/10/99

FIGURE 6.

Intra-Core Streamline T=3-Execute Handoffs

Inventor With S. LinDate 5/21/99Witness Leen ChenDate 20 May 99Inventor John MurrayDate 5/21/99Witness Daniel J. MillerDate 20 May 99Inventor P. D. O'NeilDate 5/21/99W. J. Lee
Bruce KoenS/Lees
5/20/99

Disclosure for Patent Committee

April 29, 1999

5/20/99

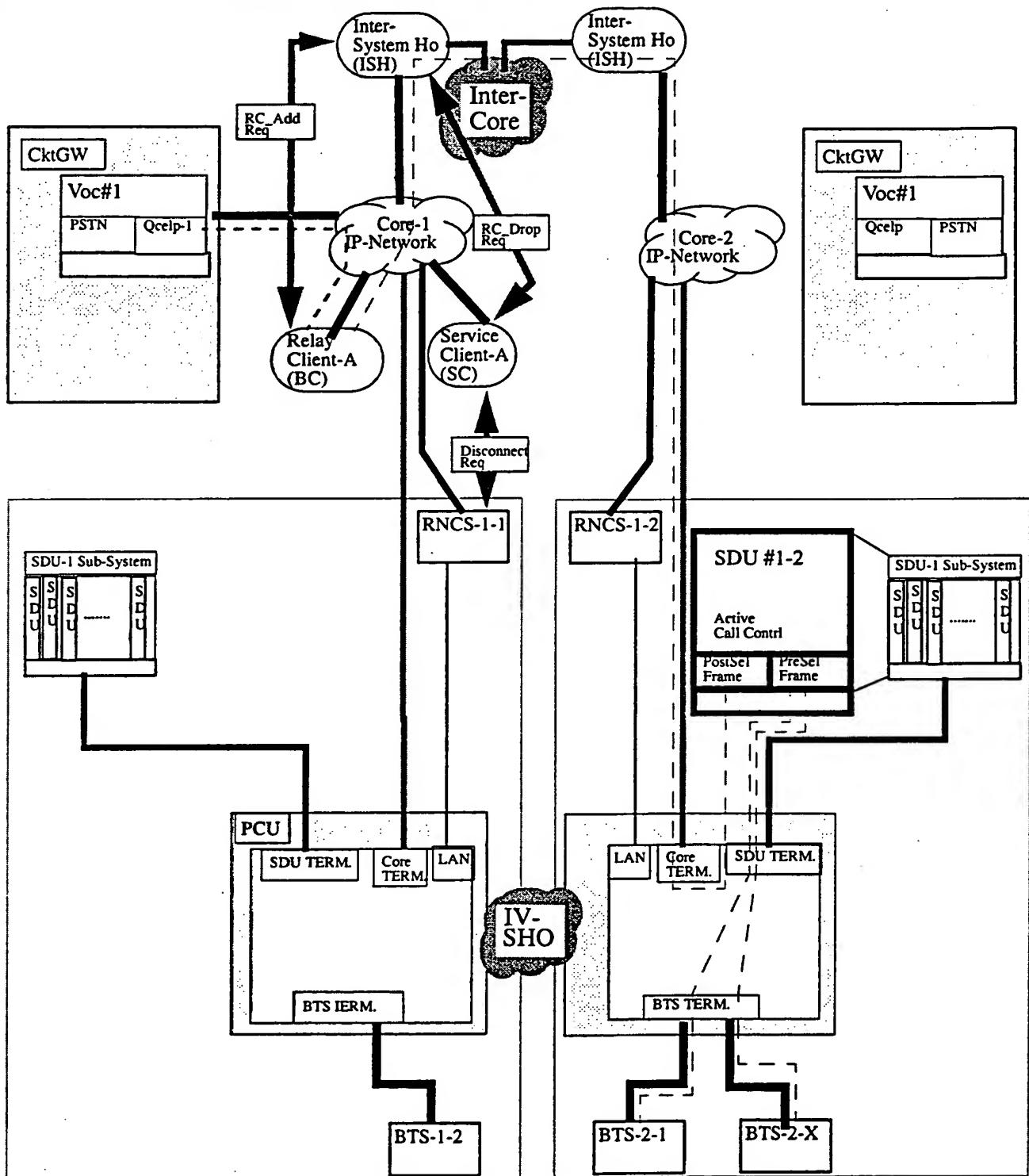
5/20/99

5/20/99

John Murray 5/21/99
D. J. Miller 5/21/99
Bruce Koen 5/21/99

FIGURE 7.

Intra-Core Streamline T-4 Tear-Down



Inventor With D.R. Date 5/20/99 Witness Long Duan Date 20 May - 99
Inventor Long Duan Date 5/20/99 Witness Harold H. Lin Date 20 May - 99
Inventor T. L. D. Date 5/20/99
R. J. Lee
J. S. M. Khan
5/20/99
5/20/99

4. List the closest known technology (attach article, patent, catalog sheet or other documentation).

Three Party Conference based applications.

Inter-System Soft handoff connectivity disclosures.

5. Improvement(s) over known technology.

Current methods for performing moves to new RAN components are intrusive to the Core and Mobile Station. These are usually performed in a manner where Core and Radio connections must be broken and then re-established. In many cases, the integrity of the new connections is unknown until primary control and bearer traffic is relinquished to the new RAN components. While the original connections remain for procedure failure reasons, the fallback to these connections are typically slow thus degrading the call quality. Through the disclosed method, in particular the introduction of the Core "Y" and RAN "Y" functions, the Core fixed based components and RF connections are unchanged (e.g., No CDMA Hard Handoff) through the movement to new RAN based components. The method allows for an integrity check prior to relinquishing control to the new components thus preserving the call quality through the component handoff.

6. What new elements (e.g. components, circuits, process steps) or combination of known elements or software algorithm produced the improvement?

The invention introduces a set of key functional elements, enabled by the Aerolon network architecture, which used in combination provide for the seamless high integrity handoff of RAN based components.

- Introduction of a Relay Client (Core or RAN based) which serves as the Core "Y" function. Enabling the termination and selection of multiple RAN bearer paths.
- Introduction of a RAN "Y" function which provides the BTS to support multiple bearer and control paths to SDUs (RSCs).
- Selective Connection integrity checks within the Core "Y" and RAN "Y" functions allowing for path integrity validation prior to activation of control and bearer swap.
- SDU to SDU connections via either Core "Y" or RAN "Y" to forward critical dynamic call configuration and state (e.g., RF Layer 2 State, High Speed Data State: PCF, RLP and Bearer Client State) and coordination of the relinquishing of call control and bearer traffic processing.

Inventor Will D. Rin Date 5/20/99 Witness Lyn O'Leary Date 20 May 99
Inventor John M. T. M. Date 5/20/99 Witness Douglas V. L. M. Date 20 May 99
Inventor T. J. D. S. Date 5/20/99
K. J. J. J. S. L. 1999
B. M. P. M. 5/20/99



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: PEDZIWIATR, JOSEPH ET AL. EXAMINER: IQBAL, KHAWAR
SERIAL NO.: 10/043,797 GROUP: 2686
FILED: JANUARY 11, 2001 CASE NO.: CE08185R
TITLED: HIGH INTEGRITY RADIO ACCESS NETWORK CLIENT
REALLOCATION IN A WIRELESS COMMUNICATION NETWORK

Motorola, Inc.
Corporate Offices
1303 E. Algonquin Road
Schaumburg, IL 60196
June 29, 2005

Declaration Under 37 CFR §1.131

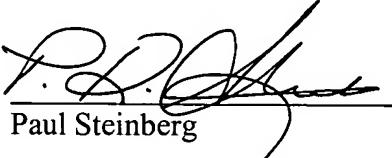
1. We, Joseph Pedziwiatr, Paul Steinberg, William S. Pierce, Richard James Malcolm, Daniel Francis Tell and Brian Jack Moore, are inventors of the present application and hereby make this declaration.
2. This declaration establishes the completion of the invention in this application in the United States, at a date prior to June 29, 2001 that is the effective date of United States Patent Application Publication No. 2003/0003919 A1 to Beming et al., which was cited by the Examiner.
3. The claimed subject matter of this patent application was the subject of a written disclosure prepared after conception and wherein the written disclosure was submitted as a Disclosure for Patent Committee to the assignee, Motorola, Inc. for the purpose of documenting, considering and maintaining invention disclosures. The Disclosure for Patent Committee is attached as Exhibit A.
4. The conception date of May 21, 1999, which is the earliest verifiable date an individual who is a non-innovator witnessed the claimed subject matter, is prior to June 29, 2001.
5. On or about June 24, 1999, Motorola, Inc. decided to pursue patent protection on the written disclosure previously submitted, and that thereafter, in due course, a patent application was prepared and filed in the United States Patent Office on January 11, 2001.

6. Prior to June 29, 2001 to January 11, 2001, we exercised due diligence to prepare and file the pending patent application. During this time period, we worked toward preparing the pending patent application for filing with the United States Patent and Trademark Office.

7. All of the above statements made of our own knowledge are true and all statement made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that willful false statements may jeopardize the validity of this application or any patent issuing thereon.


Joseph Pedziwiatr

6/30/05
Date


Paul Steinberg

6/30/2005
Date

William S. Pierce

Date

Richard James Malcolm

Date

Daniel Francis Tell

Date


Brian Jack Moore

6/30/2005
Date



#4

Motorola Confidential Proprietary

DISCLOSURE FOR PATENT COMMITTEE
SUBMITTED PURSUANT TO EMPLOYMENT AGREEMENT
FOR INSTRUCTIONS FOR COMPLETION REFER TO
DISCLOSURE INSTRUCTION PROCEDURE

Inventor(s) will not fill in

Operation

DISCLOSURE NO.

CE08185R DATE 4/27/99

Patent Committee Action

Inventor(s) Name(s)

Pedziwiatr, Joseph Pierce, Bill
Steinberg, Paul Malcolm, Rich
Moore, Dunn Spear, John
 Teel, Dan
 Spear, Steve

Inventor must fill in items 1 thru 13. Items 2 to 5 may require extra sheets.

BE SURE that all attachments are signed and dated by both the Inventor(s) and witnesses.

1. Name of the invention. (Limit to ten words.)
Seamless High Integrity Radio Access Client Handoff in a Wireless Network
2. State the problem(s) solved by the invention.
See attached.
3. Describe the invention, including its operation, purpose and environment. (Use separate sheets as required).
See attached.
4. List the closest known technology (attach article, patent, catalog sheet or other documentation).
See attached.
5. Improvement(s) over known technology.
See attached.
6. What new elements (e.g. components, circuits, process steps) or combination of known elements or software algorithm produced the improvement?
See attached.
7. What are the potential applications for use of this invention?
Anyone deploying CDMA systems (Lucent, LG, Samsung, Nortel, etc.)
8. Conception date? _____ (Attach earliest log sheets, drawings, etc., to support dates).
9. To whom did you first disclose this invention? Name: _____ Date: _____
10. Date the device was first built and tested.
Present location of the device? Not currently implemented.

DETERMINATION OF LEGAL INVENTORSHIP WILL BE BY THE PATENT DEPARTMENT.

Inventor's signature (IMPORTANT - YOU MUST USE YOUR FULL NAME) - NO INITIALS

11. Inventor's Full Name: (Type)
Joseph Pedziwiatr Signature Date Social Security No.
640 S. 7th City 4/27/99 334-60-2270

Home Address: Street
640 S. 7th City State Country Zip Code
La Grange IL USA 60525

Citizen of (i.e. U.S., Germany, etc.) Dept. No. 847- Phone Room No. Employee Status
USA 8C573 432-5098 IL7512 Permanent Contractor

Inventor's Immediate Supervisor Dept. No. Phone Social Security No.
Paul Steinberg 8C573 2-5867 10025881

Collected
Gal

12. Inventor's Full Name: (Type) Paul Steinberg Signature  Date 5/21/99 Social Security No. 323-42-5257
 Home Address: Street City State Country Zip Code

Citizen of (i.e. U.S., Germany, etc.)	Dept. No.	Phone	Room No.	Employee Status
		2-5867		<input type="checkbox"/> Permanent <input type="checkbox"/> Contractor

Inventor's Immediate Supervisor	Dept. No.	Phone	Social Security No.
---------------------------------	-----------	-------	---------------------

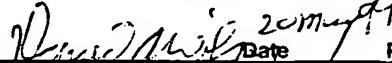
13. Inventor's Full Name: (Type) William S. Pierce Signature  Date 5/21/99 Social Security No. 340-66-5315
 Home Address: Street 8 Dryden Court City Beth Algonquin State IL Country USA Zip Code 60102

Citizen of (i.e. U.S., Germany, etc.)	Dept. No.	Phone	Room No.	Employee Status
	BL 568	632-7413	3C5	<input checked="" type="checkbox"/> Permanent <input type="checkbox"/> Contractor

Inventor's Immediate Supervisor	Dept. No.	Phone	Social Security No.
---------------------------------	-----------	-------	---------------------

Witness signatures (TWO WITNESSES ARE REQUIRED). Witness must sign and date this form and all attachments.
 THE WITNESSES IN SIGNING THIS FORM ATTEST TO THE FACT THAT THEY UNDERSTAND THE INVENTION.

14. Witness Name:(Type) LARRY D. JIVEC Signature  Date 20 May 99 Phone 847 632-5259

15. Witness Name: (Type) Donald Alwick Signature  Date 20 May 99 Phone 847 632-6103

Items 16 thru 24 are to be filled in by the ENGINEERING/PRODUCT MANAGER or above.

THE MANAGER IN SIGNING THIS FORM ATTESTS TO THE FACT THAT HE UNDERSTANDS THE INVENTION.

16. What product will this invention be used in? (No code names -- use brief description if necessary)
 Aerolon applications.

17. When (was) (will) the first offer for sale of a product incorporating this invention (be) made?
 Date: _____

18. When is the estimated shipping date?

19. When (was) (will) the first disclosure outside of Motorola (be) made? How and to whom? Nondisclosure
 agreement signed? State title and date of publication, if any.

20. What is the market for products incorporating this invention? Be specific and quantitative.
 GSM/CDMA/UMTS Cellular Systems, GSM/CDMA/UMTS Enterprise Wireless Systems
 GSM/CDMA/UMTS Wireless Local Loop Systems

21. Who are the potential competitors? What is the possibility this invention will be used by competitors? Which
 ones?

Lucent, Samsung, LG, Nortel, Cisco, Ericsson, Nokia

22. Did this invention result from work on a development Contract? (YES) (NO) Contract No. _____
 Who was the contracting party?

23. Discuss the business impact that this invention will have on Motorola. Be specific and quantitative.
 This invention provides a means to seamlessly move the bearer and control client functions from one Radio Access Network to another. The method uses bridging functions within the Core and RAN networks allowing for simultaneous high integrity connections between the existing a future RAN components through the move operation.

24. Manager's Name (Type) _____ Signature _____ Date _____ Dept. No. _____ Phone _____

DETERMINATION OF LEGAL INVENTORSHIP WILL BE MADE BY THE PATENT DEPARTMENT.

Inventor's signature (IMPORTANT -YOU MUST USE YOUR FULL NAME)--NO INITIALS--

11. Inventor's Full Name: Signature Date Social Security No.& Commerce ID
 Richard James Malcolm *R. J. Malcolm* 42/04/98 351-50-4876 10040345
 S-21-98

Home Address: Street 625 Paxton Place	City Carol Stream	State IL	Country USA	Zip Code 60188
--	----------------------	-------------	----------------	-------------------

Citizen of (i.e. U.S., Germany, etc.) US	Dept. No. BC568	Phone 2-6063	Mail drop & Post no. IL27 3-3c	Employee Status
---	--------------------	-----------------	-----------------------------------	-----------------

Inventor's Immediate Supervisor Dan Tell	Dept. No. BD996	Phone 2-5301	Social Security No .& Commerce ID 350-42-1127	Permanent_X_ Contractor 10039680
---	--------------------	-----------------	--	-------------------------------------

Motorola Confidential Proprietary Upon Completion

Page 2-Disclosure No. _____ Motorola Confidential Proprietary Upon Completion
 12. Inventor's Full Name: (Type) Signature Date Social Security No.& Commerce ID
 Daniel Francis Tell *D. Francis Tell* 5-20-98 350-42-1127 10039680

Home Address: Street 1533 Bowling Green	City Lake Forest	State IL	Country USA	Zip Code 60045
--	---------------------	-------------	----------------	-------------------

Citizen of (i.e. U.S., Germany, etc.) US	Dept. No. BD996	Phone 2-5301	Mail drop & Post No. IL27	Employee Status 3-5C
---	--------------------	-----------------	------------------------------	-------------------------

Inventor's Immediate Supervisor John Thode	Dept. No. BD908	Phone 2-5322	Social Security No. & Commerce ID 10045518	Permanent_X_ Contractor
---	--------------------	-----------------	---	-------------------------

13. Inventor's Full Name: (Type) Signature Date Social Security No. & Commerce ID
 Paul Daniel Steinberg *P. Daniel Steinberg* 323-42-5257

Home Address: Street 1200 Keim Trail	City Bartlett	State IL	Country USA	Zip Code 60103
---	------------------	-------------	----------------	-------------------

Citizen of (i.e. U.S., Germany, etc.) USA	Dept. No. BC573	Phone 2-5867	Mail drop & Post no. IL27	Employee Status 3N9
--	--------------------	-----------------	------------------------------	------------------------

Inventor's Immediate Supervisor John Cipolla	Dept. No. BC573	Phone 2-5283	Social Security No. & Commerce ID 10041815	Permanent_X_ Contractor
---	--------------------	-----------------	---	-------------------------

Inventor's Full Name: (Type) Brian Jack Moore	Signature <i>Brian Jack Moore 5/20/97</i>	Date 5/20/97	Social Security No. & Commerce ID 336-42-6399
--	--	-----------------	--

Home Address: Street 718 Bon Aire Drive	City Palatine	State IL	Country USA	Zip Code 60067
--	------------------	-------------	----------------	-------------------

Citizen of (i.e. U.S., Germany, etc.) USA	Dept. No. BD537	Phone 2-5266	Mail drop & Post no. IL27	Employee Status AR3223
--	--------------------	-----------------	------------------------------	---------------------------

Inventor's Immediate Supervisor Don Benkeser	Dept. No. BD537	Phone 5-0137	Social Security No. & Commerce ID 316-54-3649	Permanent_X_ Contractor
---	--------------------	-----------------	--	-------------------------

Inventor's Full Name: (Type)	Signature	Date	Social Security No. & Commerce ID		
John M. Sauer	<i>John M. Sauer</i>	<i>5/21/88</i>	312666792		
Home Address: Street 1066 Augustana Drive	City Naperville	State II	Country USA	Zip Code 60565	
Citizen of (i.e. U.S., Germany, etc.) USA	Dept. No. BC588	Phone 2-5707	Mail drop & Post no. IL-27	Employee Status	
Inventor's Immediate Supervisor Bill Payne	Dept. No. BC279	Phone 5-5154	Social Security No. & Commerce ID 510-46-2151	Permanent <input checked="" type="checkbox"/> Contractor	
Inventor's Full Name: (Type) Stephen Lee Spear	Signature	Date	Social Security No. & Commerce ID 344-38-0983		
Home Address: Street 25 Williamsburg	City Skokie	State II	Country USA	Zip Code 60203	
Citizen of (i.e. U.S., Germany, etc.) USA	Dept. No. BC597	Phone 2-5251	Mail drop & Post no. AR3205	Employee Status	
Inventor's Immediate Supervisor Jerry Campbell	Dept. No. BC597	Phone 2-2162	Social Security No. & Commerce ID 510-46-2151	Permanent <input checked="" type="checkbox"/> Contractor	

DETERMINATION OF LEGAL INVENTORSHIP WILL BE MADE BY THE PATENT DEPARTMENT.

Inventor's signature (IMPORTANT -YOU MUST USE YOUR FULL NAME)--NO INITIALS--

11. Inventor's Full Name: Richard E. White Signature 05/20/00 Date Social Security No.& Commerce ID
178-44-0863

Home Address: Street 980 Milford St City Cary State IL Country USA Zip Code 60013

Citizen of (i.e. U.S., Germany, etc.) USA Dept. No. BC279 Phone 5-0235 Mail drop & Post no. IL27 2A8 Employee Status

Inventor's Immediate Supervisor Bill Payne Dept. No. BC279 Phone 5-5155 Social Security No .& Commerce ID

Motorola Confidential Proprietary Upon Completion

Page 2-Disclosure No. _____ Motorola Confidential Proprietary Upon Completion



Disclosure for Patent Committee

1. Name of the invention

Seamless High Integrity Radio Access Client Handoff in a Wireless Network

2. State the problem(s) solved by the invention

When a Mobile Termination device accesses the network requesting a desired service, a set of resources and path connections (Control and Bearer) are established within the Core and RAN network to support the requested service. This initial call configuration is assumed to be the optimum call configuration, given the state of the networks at the time of access. But, the dynamics of the RF environment along the mobility of the Mobile Terminating device, this initial call configuration may quickly become sub-optimum.

Functions within the RAN exist to optimize the RF paths. These RF path optimizations result in the establishment or removal of RAN based resources along with their associated control and bearer paths. As the Mobile Terminating device moves throughout the system, the crossing of RAN and CORE boundaries is inevitable. RAN boundary crossings are addressed within the Aerolon network via RAN to RAN interfaces. These interfaces allow Mobile Termination Device services to be provided across the boundaries. In general these interfaces allow for the allocation of BTS and RF resources along with a path for control messaging and bearer traffic delivery. But the support of calls across these interfaces may become sub-optimum over time. The control and bearer traffic paths may be over extended thus introducing unacceptable control latency and bearer traffic delays (including differential delays).

Typically, Radio Access Call Control and Bearer Path Management is centralized at a point within the RAN, referred to in general terms further as the RAN Session Client (RSC). (In particular to CDMA (Wide Band CDMA) the Selector Distribution Unit (SDU) and Radio Network Control Servers (RNCS) are instantiations of an RSC. Critical in maintaining an optimum call configuration is the location of the RSC. The RSC placement is critical, since the RSC serves as the termination point for the Core and BTS Bearer Path along with RAN Call Control. Locating the RSC to minimize bearer traffic delays and control latency is a crucial aspect of an optimum call configuration.

It is therefore beneficial from a Call Quality perspective to transfer the RSC from one physical point to another within the RAN Network.

Moving the physical location of the RSC is currently supported within some networks via intrusive manners. These procedures generally break and re-establish both Core and Radio connections, such as CDMA Hard Handoff. This not only impacts the quality of a given call but requires undesired interaction between the Core Network and MS on RAN boundary limitations. In addition, any modification to the Core and MS connections brings the potential for a failed connection.

Inventor John D. Lin Date 5/10/99 Witness Samuel J. Lin Date 20 May 99

Inventor David T. Lin Date 5-20-99 Witness David T. Lin Date 20 May 99

Inventor P. D. O. Lin Date 5/10/99

R. J. Lin
Patent Attorney

5/21/99

5/20/99

April 29, 1999

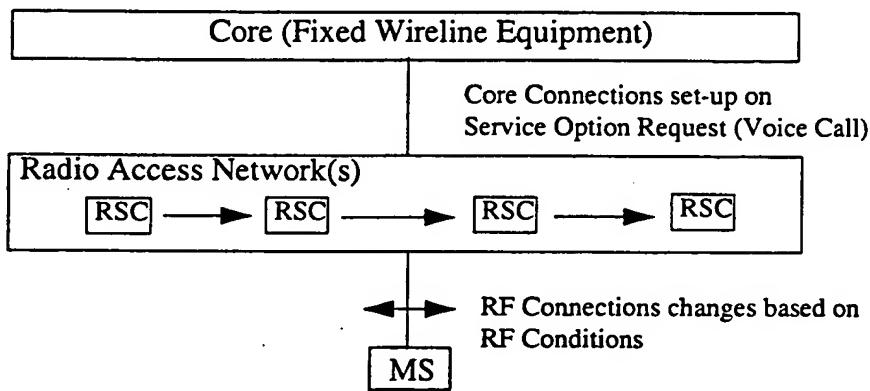
A method needs to be provided which provides a seamless RSC reallocation and which preserves the integrity of the call and connects.

3. Describe the invention, including its operation, purpose and environment.

The following invention specifies a method of moving the RSC within and across RANs in a seamless manner with high integrity. Figure 1, "Seamless RSC Handoff Illustration," on page 2 depicts the objective of this invention. The figure highlights the Fixed Equipment in the Core network and MS's connections unaffected by RSC reallocation within the Radio Access Network(s).

FIGURE 1.

Seamless RSC Handoff Illustration



In order to provide for a seamless RSC handoff, two parallel paths from the BTS(s) and Core network are created. These connections involve two RSCs with the parallel paths supported via a RANS and Core "Y" bridging function. The "Y" bridging functions serve to provide for un-interrupted Bearer and Control for a given call session through an RSC handoff.

Figure 2, "System Bridging Functionality," on page 3 illustrates a Seamless High Integrity RSC handoff. The execution of such a procedure required the introduction of multiple bridging functions. The first bridging function, identified as the Core "Y" (a.k.a., Relay Client in Aerolon) provides a fixed termination point for fixed core based equipment (e.g., Circuit Gateway). Typically, these paths are formed at initial system access of the MSs. The Core "Y" provides bridging functions between the RSCs during the transitioning process. Further, the bridging function will allow for the integrity of the connection between the Core and new RSC prior to the bearer and control handoff within the RSC.

A RAN "Y" function is also required to shield the MS from the RSC transition. This RAN "Y" function supports the bridging and selection of control and bearer traffic from multiple RSCs. As with the Core "Y" functionality, the bridging function allows for the integrity check of the connections between the new RSC and BTS prior to the bearer and control handoff within the RSC. Typically, the multiple RAN "Y" connections will be established, since multiple BTSs are involved in a given call (CDMA Soft Handoff).

Inventor John S. P. Date 5/10/99 Witness Tom O. L. Date 20. May - 99
Inventor John J. M. Date 5-2-99 Witness John W. Miller Date 20 May 99
Inventor P.D. H. Date 5/2/99
R. J. M. 5/21/99
B. J. P. 5/20/99

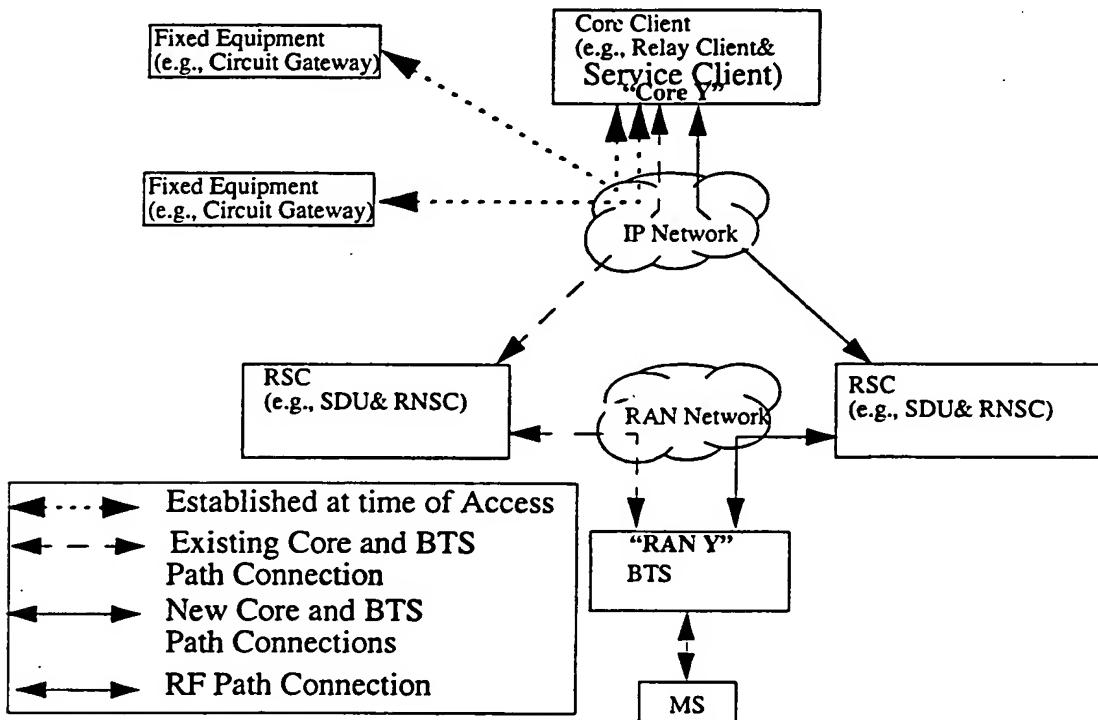
Disclosure for Patent Committee April 29, 1999
Ivanam 5/20/99 Jay Radwin 5/21/99
D. L. E. 5/20/99

In most cases (e.g., CDMA), handing off of the RSCs involved the preservation of critical data of the Core and MSs. As an example, in a CDMA RSC handoff, the State of the MSs RF Layer 2 State information must be preserved. The relaying of this information between the two RSCs along with the coordination of the handoff would occur via either the Core "Y" or RAN "Y" function.

When all required information is obtained by the new RSC and Core and BTS paths are validated, the new RSC will take-over the control and bearer processing for the call. The old RSC connection will remain providing a graceful fallback in the case of a RSC handoff failure.

FIGURE 2.

System Bridging Functionality



The following set of illustrations depict the "Seamless High Integrity Radio Access Client Hand-off" in the context of CDMA.

Figure 3, "Intra-Core Streamline T=0," on page 5 illustrates a CDMA Call involved in an Inter-RAN soft handoff. CORE-1 and RAN-1 support the termination of the Core End-Points for a given Voice Call (Note multiple Core end-point may be involved). The Core network supports the Relay Client and the Service Client. Within RAN-1, the RNCS-1-1 supports the call control along with the selection function. The BTSs involved in the call are not contained within RAN-1 but are supported via bearer and control backhaul through the Inter-Vendor Soft Handoff (IV-SHO) inter-connect. At this time, a SDU/RNCS handoff (RSC Handoff) is desired.

Figure 4, "Intra-Core Streamline T=1-Establish RAN Connections," on page 6 illustrates the establishment of the SDU to BTS connection. An SDU is assigned in RAN-2 along with the BTS

Inventor William J. Rin Date 5/26/99 Witness James O. Lee Date 20. May - 99
 Inventor John M. May Date 5/26/99 Witness Donald W. Hulberg Date 20. May - 99
 Inventor J. P. C. O'Farrell Date 5/26/99
James J. Nease 5/26/99

connections to the current serving BTSs. This function requires the RAN "Y" in the BTS. Continuation of the procedure will not occur until the new SDU to BTS(s) path integrity is assured. RAN to RAN control communications are used to initiate and coordinate the new RAN configuration.

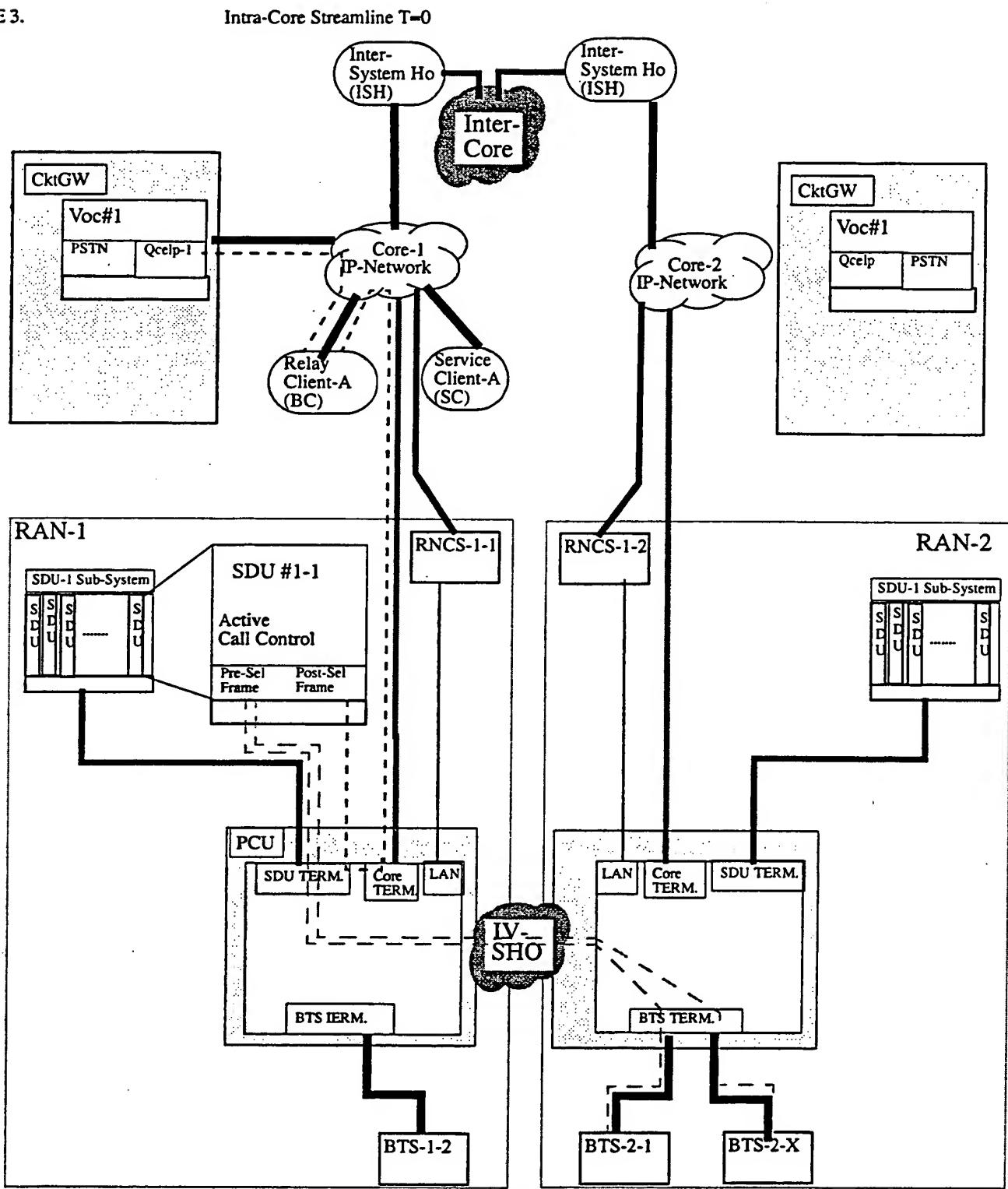
Figure 5, "Intra-Core Streamline T=2-Establish Core Connections," on page 7 illustrates the establishment of the Core Network. An interaction will take place between the Core networks to establish a Path to the new SDU. The Relay Client establishes a Core "Y" bridging functions allowing for the new SDU to verify its path connection integrity with the Relay Client. Continuation of the procedure will not occur until the new SDU to Relay Client path integrity is assured. At this time, the Core "Y" and RAN "Y" connections are established and the handing off of control and bearer management can be performed.

Figure 6, "Intra-Core Streamline T=3-Execute Handoffs," on page 8 illustrates the interaction between the RANs to obtain control information. It is expected to minimize latency that the required call data would be exchanged via the bearer path. The use of either the Core "Y" or RAN "Y" provides a channel between the two SDUs for control data exchange. Once the required data is obtained by the new SDU, the new SDU will take control of the call. The old SDU and its associated connections will remain as a fallback configuration.

Figure 7, "Intra-Core Streamline T=4-Tear-Down," on page 9 illustrates the teardown of the initial connections. This would be performed on the successful completion of the SDU handoff.

Inventor John S. Rin Date 5/10/99 Witness Frank J. Rin Date 10-May-99
Inventor James J. Rin Date 5-20-99 Witness Dennis J. Rin Date 10-May-99
Inventor T. L. G. G. Date 5/2/99
K. J. J. J. 5/10/99
B. M. J. J. 5/20/99
Disclosure for Patent Committee April 29, 1999 4
J. J. J. J. 5/10/99 Joseph Padhye 5/21/99
D. L. E. E. E. E. 5/20/99

FIGURE 3.

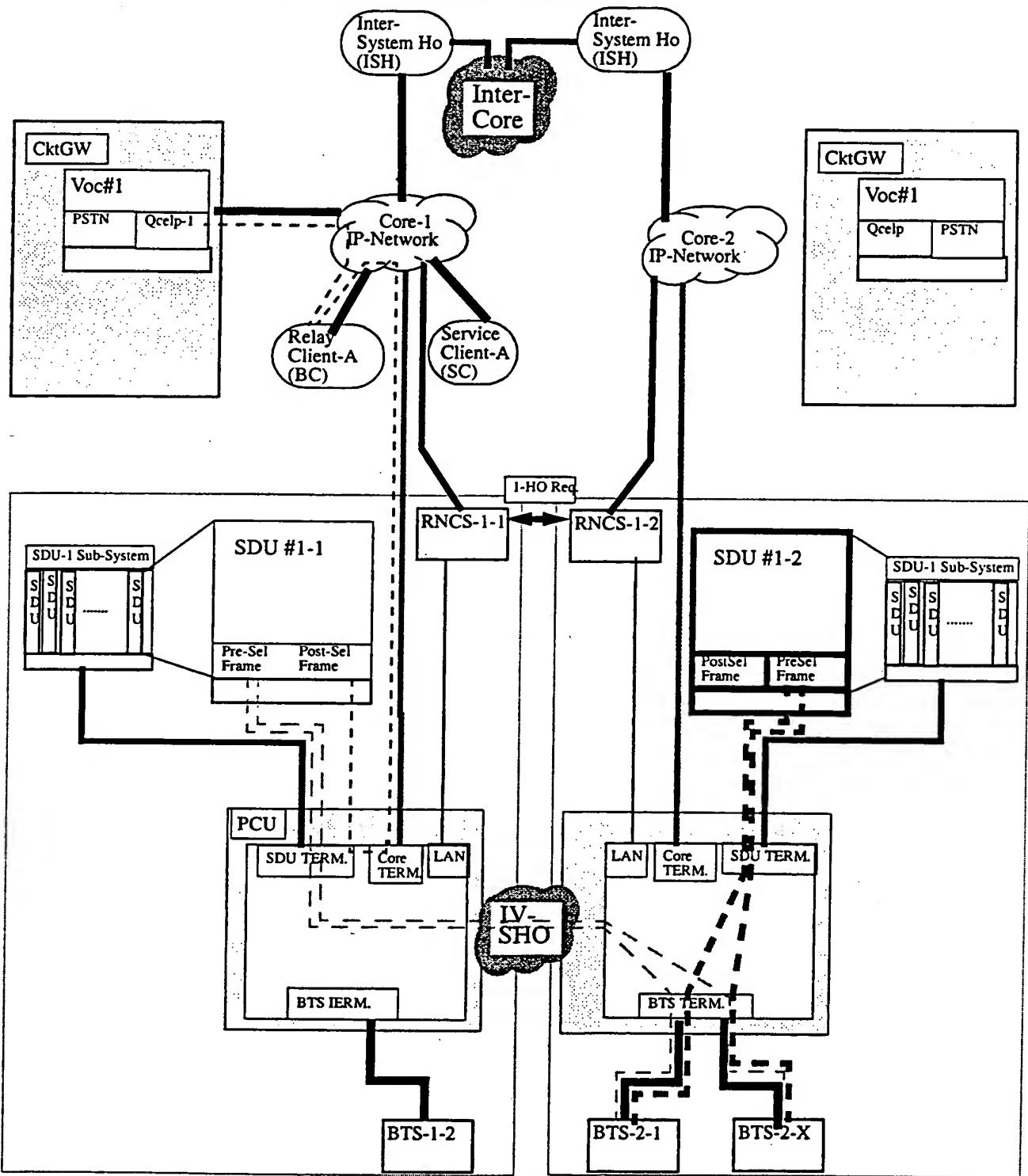


Inventor John S. P. Date 5/10/99 Witness Tom O'Brien Date 20-May-99
 Inventor John S. P. Date 5/10/99 Witness Donald W. H. King Date 20-May-99
 Inventor P. J. D. Date 5/10/99
R. J. D. 5/10/99
B. J. K. 5/22/99

Disclosure for Patent Committee
 J. Jacobs 5/20/99 April 29, 1999 Yannick Radomski 5/21/99
 R. J. Jacobs 5/20/99 Yannick Radomski 5/21/99

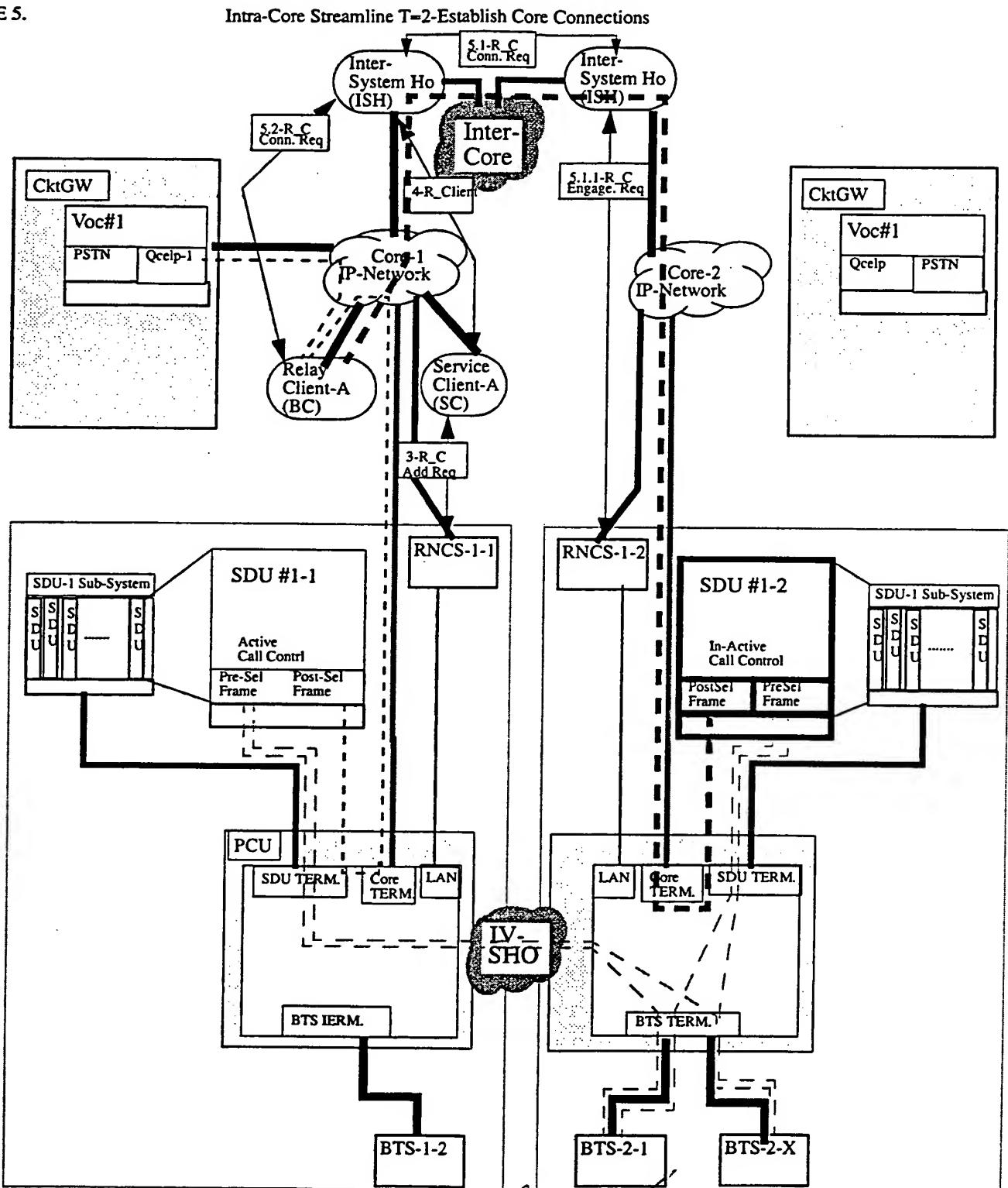
FIGURE 4.

Intra-Core Streamline T-1-Establish RAN Connections



Inventor A. H. Srinivasan Date 5/10/99 Witness Loren J. Linn Date 20-May-99
 Inventor Chandru Rao Date 5/10/99 Witness Vimal M. Mehta Date 20-May-99
 Inventor X. L. D. Datta Date 5/10/99
721,000
Patent No.
5,870,771

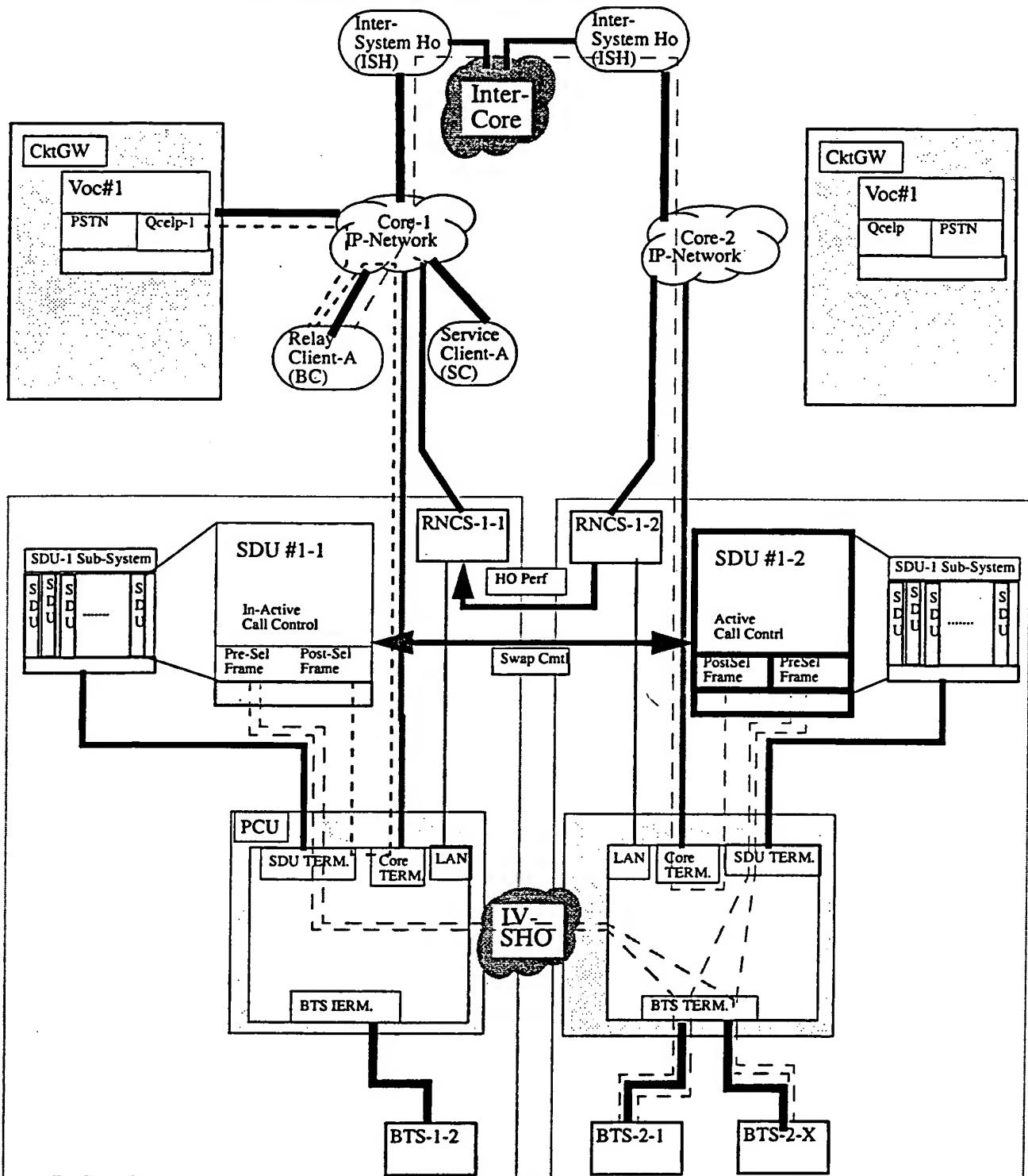
FIGURE 5.



Inventor John D. R. Date 5/10/99 Witness Larry Olsen Date 20. May - 99
 Inventor John D. R. Date 5/10/99 Witness Daniel J. Malin Date 20. May - 99
 Inventor J. D. R. Date 5/20/99
John D. R.
John D. R.
John D. R.

FIGURE 6.

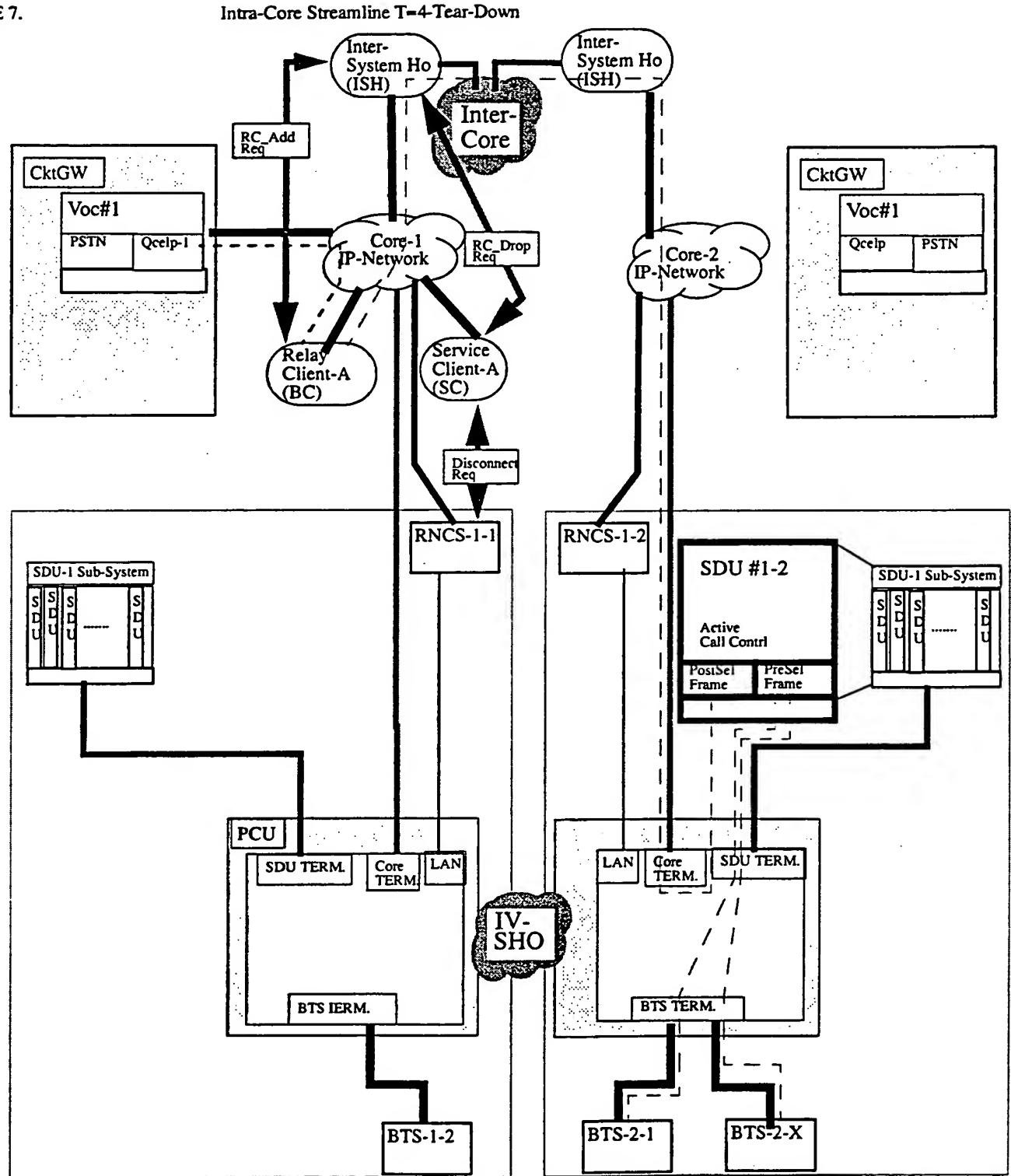
Intra-Core Streamline T=3-Execute Handoffs

Inventor With S. LinDate 5/20/99Witness Leen ShiehDate 20 May 99Inventor John ChouDate 5/20/99Witness Daniel J. MillerDate 20 May 99Inventor P. D. G.Date 5/20/99S. Lee
5/20/99
5/20/99

Disclosure for Patent Cooperation

April 29, 1999

FIGURE 7.



Inventor Will D. Re Date 5/20/99 Witness Long D. Pham Date 20 May - 99

Inventor Long D. Pham Date 5/20/99 Witness Dennis L. Kell Date 20 May - 99

Inventor T. L. D. Pham Date 5/20/99

Will D. Re
Date 5/20/99
Long D. Pham
Date 5/20/99

4. List the closest known technology (attach article, patent, catalog sheet or other documentation).

Three Party Conference based applications.

Inter-System Soft handoff connectivity disclosures.

5. Improvement(s) over known technology.

Current methods for performing moves to new RAN components are intrusive to the Core and Mobile Station. These are usually performed in a manner where Core and Radio connections must be broken and then re-established. In many cases, the integrity of the new connections is unknown until primary control and bearer traffic is relinquished to the new RAN components. While the original connections remain for procedure failure reasons, the fallback to these connections are typically slow thus degrading the call quality. Through the disclosed method, in particular the introduction of the Core "Y" and RAN "Y" functions, the Core fixed based components and RF connections are unchanged (e.g., No CDMA Hard Handoff) through the movement to new RAN based components. The method allows for an integrity check prior to relinquishing control to the new components thus preserving the call quality through the component handoff.

6. What new elements (e.g. components, circuits, process steps) or combination of known elements or software algorithm produced the improvement?

The invention introduces a set of key functional elements, enabled by the Aerolon network architecture, which used in combination provide for the seamless high integrity handoff of RAN based components.

- Introduction of a Relay Client (Core or RAN based) which serves as the Core "Y" function. Enabling the termination and selection of multiple RAN bearer paths.
- Introduction of a RAN "Y" function which provides the BTS to support multiple bearer and control paths to SDUs (RSCs).
- Selective Connection integrity checks within the Core "Y" and RAN "Y" functions allowing for path integrity validation prior to activation of control and bearer swap.
- SDU to SDU connections via either Core "Y" or RAN "Y" to forward critical dynamic call configuration and state (e.g., RF Layer 2 State, High Speed Data State: PCF, RLP and Bearer Client State) and coordination of the relinquishing of call control and bearer traffic processing.

Inventor Will D. Ri Date 5/20/99 Witness Lori Olsen Date 20 May 99
Inventor John M. T. Date 5/21/99 Witness D. G. V. L. S. H. Date 20 May 99
Inventor T. D. K. Date 5/21/99
K. J. J.
B. M. R.
Date 5/21/99
April 29, 1999
Disclosure for Patent Committee
5/20/99 Joseph M. Radyszak 5/21/99
10



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: PEDZIWIATR, JOSEPH ET AL. EXAMINER: IQBAL, KHAWAR
SERIAL NO.: 10/043,797 GROUP: 2686
FILED: JANUARY 11, 2001 CASE NO.: CE08185R
TITLED: HIGH INTEGRITY RADIO ACCESS NETWORK CLIENT
REALLOCATION IN A WIRELESS COMMUNICATION NETWORK

Motorola, Inc.
Corporate Offices
1303 E. Algonquin Road
Schaumburg, IL 60196
June 30, 2005

Declaration Under 37 CFR §1.131

1. We, Joseph Pedziwiatr, Paul Steinberg, William S. Pierce, Richard James Malcolm, Daniel Francis Tell and Brian Jack Moore, are inventors of the present application and hereby make this declaration.
2. This declaration establishes the completion of the invention in this application in the United States, at a date prior to June 29, 2001 that is the effective date of United States Patent Application Publication No. 2003/0003919 A1 to Beming et al., which was cited by the Examiner.
3. The claimed subject matter of this patent application was the subject of a written disclosure prepared after conception and wherein the written disclosure was submitted as a Disclosure for Patent Committee to the assignee, Motorola, Inc. for the purpose of documenting, considering and maintaining invention disclosures. The Disclosure for Patent Committee is attached as Exhibit A.
4. The conception date of May 21, 1999, which is the earliest verifiable date an individual who is a non-innovator witnessed the claimed subject matter, is prior to June 29, 2001.
5. On or about June 24, 1999, Motorola, Inc. decided to pursue patent protection on the written disclosure previously submitted, and that thereafter, in due course, a patent application was prepared and filed in the United States Patent Office on January 11, 2001.

6. Prior to June 29, 2001 to January 11, 2001, we exercised due diligence to prepare and file the pending patent application. During this time period, we worked toward preparing the pending patent application for filing with the United States Patent and Trademark Office.

7. All of the above statements made of our own knowledge are true and all statement made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that willful false statements may jeopardize the validity of this application or any patent issuing thereon.

Joseph Pedziwiatr _____ Date

Paul Steinberg _____ Date

William S. Pierce _____ Date

Richard James Malcolm 6/30/2005
Richard James Malcolm Date

Daniel Francis Tell 6/30/2005
Daniel Francis Tell Date

Brian Jack Moore _____ Date



X4

Motorola Confidential Proprietary

DISCLOSURE FOR PATENT COMMITTEE

SUBMITTED PURSUANT TO EMPLOYMENT AGREEMENT

**FOR INSTRUCTIONS FOR COMPLETION REFER TO
DISCLOSURE INSTRUCTION PROCEDURE**

Inventor(s) will not fill in

Operation

DISCLOSURE NO.

CE08185R DATE 4/27/99

Patent Committee Action

Inventor(s) Name(s)

Pedziwiatr, Joseph Pierce, Bill
 Steinberg, Paul Malcolm, Rich
 -leff, Don Moore, Dunn : Steve, John
 Spear, Steve

Inventor must fill in items 1 thru 13. Items 2 to 5 may require extra sheets.

BE SURE that all attachments are signed and dated by both the Inventor(s) and witnesses.

1. Name of the invention. (Limit to ten word.)

Seamless High Integrity Radio Access Client Handoff in a Wireless Network

2. State the problem(s) solved by the invention.

See attached.

3. Describe the invention, including its operation, purpose and environment. (Use separate sheets as required).
See attached.

4. List the closest known technology (attach article, patent, catalog sheet or other documentation).
See attached.

5. Improvement(s) over known technology.
See attached.

6. What new elements (e.g. components, circuits, process steps) or combination of known elements or software algorithm produced the improvement?
See attached.

7. What are the potential applications for use of this invention?

Anyone deploying CDMA systems (Lucent, LG, Samsung, Nortel, etc.)

8. Conception date? _____ (Attach earliest log sheets, drawings, etc., to support dates).

9. To whom did you first disclose this invention? Name: _____ Date: _____

10. Date the device was first built and tested.

Present location of the device? Not currently implemented.

DETERMINATION OF LEGAL INVENTORSHIP WILL BE BY THE PATENT DEPARTMENT.

Inventor's signature (IMPORTANT - YOU MUST USE YOUR FULL NAME) - NO INITIALS

11. Inventor's Full Name: (Type)

Joseph Pedziwiatr

Signature

Date

Social Security No.

4/21/99

334-60-2270

Home Address: Street

640 S. 7th

City

La Grange

State

IL

Country

USA

Zip Code 60525

Citizen of (i.e. U.S., Germany, etc.)

USA

Dept. No. 847 Phone

BC573 632-5098

Room No.

IL7512

Employee Status

Permanent Contractor

Inventor's Immediate Supervisor

Paul Steinberg

Dept. No.

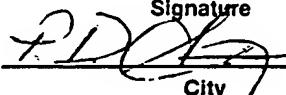
BC573 2-5867

Phone

Social Security No.

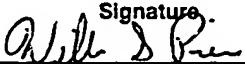
10025887

Called
Jal

12. Inventor's Full Name: (Type) Paul Steinberg Signature  Date 5/21/99 Social Security No. 323-42-5257
 Home Address: Street City State Country Zip Code

Citizen of (i.e. U.S., Germany, etc.)	Dept. No.	Phone	Room No.	Employee Status
	2-5867			<input type="checkbox"/> Permanent <input type="checkbox"/> Contractor

Inventor's Immediate Supervisor	Dept. No.	Phone	Social Security No.	

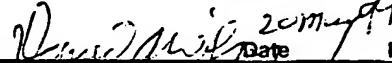
13. Inventor's Full Name: (Type) William S. Pierce Signature  Date 5/21/99 Social Security No. 340-66-5315
 Home Address: Street 8 Dryden Court City State IL Country USA Zip Code 60102

Citizen of (i.e. U.S., Germany, etc.)	Dept. No.	Phone	Room No.	Employee Status
	BC 568	632-7413	3C5	<input checked="" type="checkbox"/> Permanent <input type="checkbox"/> Contractor

Inventor's Immediate Supervisor	Dept. No.	Phone	Social Security No.	

Witness signatures (TWO WITNESSES ARE REQUIRED). Witness must sign and date this form and all attachments.
 THE WITNESSES IN SIGNING THIS FORM ATTEST TO THE FACT THAT THEY UNDERSTAND THE INVENTION.

14. Witness Name: (Type) LARRY D. JIVEC Signature  Date 20 May 99 Phone 847-632-5259

15. Witness Name: (Type) Donald A. Wilkins Signature  Date 20 May 99 Phone 847-632-6103

Items 16 thru 24 are to be filled in by the ENGINEERING/PRODUCT MANAGER or above.

THE MANAGER IN SIGNING THIS FORM ATTESTS TO THE FACT THAT HE UNDERSTANDS THE INVENTION.

16. What product will this invention be used in? (No code names -- use brief description if necessary)
 Aerolon applications.

17. When (was) (will) the first offer for sale of a product incorporating this invention (be) made?
 Date: _____

18. When is the estimated shipping date?

19. When (was) (will) the first disclosure outside of Motorola (be) made? How and to whom? Nondisclosure
 agreement signed? State title and date of publication, if any.

20. What is the market for products incorporating this invention? Be specific and quantitative.
 GSM/CDMA/UMTS Cellular Systems, GSM/CDMA/UMTS Enterprise Wireless Systems
 GSM/CDMA/UMTS Wireless Local Loop Systems

21. Who are the potential competitors? What is the possibility this invention will be used by competitors? Which
 ones?

Lucent, Samsung, LG, Nortel, Cisco, Ericsson, Nokia

22. Did this invention result from work on a development Contract? (YES) (NO) Contract No. _____
 Who was the contracting party?

23. Discuss the business impact that this invention will have on Motorola. Be specific and quantitative.
 This invention provides a means to seamlessly move the bearer and control client functions from one Radio Access Network to another. The method uses bridging functions within the Core and RAN networks allowing for simultaneous high integrity connections between the existing and future RAN components through the move operation.

24. Manager's Name (Type) _____ Signature _____ Date _____ Dept. No. _____ Phone _____

DETERMINATION OF LEGAL INVENTORSHIP WILL BE MADE BY THE PATENT DEPARTMENT.

Inventor's signature (IMPORTANT - YOU MUST USE YOUR FULL NAME)-NO INITIALS-

11. Inventor's Full Name: Signature Date Social Security No.& Commerce ID
Richard James Malcolm *Richard James* 42/64/98 351-50-4876 10040345
S-21-98

Home Address: Street City State Country Zip Code
625 Paxton Place Carol Stream IL USA 60188

Citizen of (i.e. U.S., Germany, etc.) Dept. No. Phone Mail drop & Post no. Employee Status
US BC568 2-6063 IL27 3-3c

Inventor's Immediate Supervisor Dept. No. Phone Social Security No.& Commerce ID
Dan Tell BD996 2-5301 350-42-1127 10039680

Motorola Confidential Proprietary Upon Completion

Page 2--Disclosure No.

Motorola Confidential Proprietary Upon Completion

12. Inventor's Full Name: (Type) Signature Date Social Security No.& Commerce ID
Daniel Francis Tell *Daniel Francis Tell* 5/20/98 350-42-1127 10039680
Home Address: Street City State Country Zip Code
1533 Bowling Green Lake Forest IL USA 60045

Citizen of (i.e. U.S., Germany, etc.) Dept. No. Phone Mail drop & Post no. Employee Status
US BD996 2-5301 IL27 3-5C

Inventor's Immediate Supervisor Dept. No. Phone Social Security No.& Commerce ID
John Thode BD908 2-5322 10045518

13. Inventor's Full Name: (Type) Signature Date Social Security No. & Commerce ID
Paul Daniel Steinberg *Paul Daniel Steinberg* 323-42-5257

Home Address: Street City State Country Zip Code
1200 Keim Trail Bartlett IL USA 60103

Citizen of (i.e. U.S., Germany, etc.) Dept. No. Phone Mail drop & Post no. Employee Status
USA BC573 2-5867 IL27 3N9

Inventor's Immediate Supervisor Dept. No. Phone Social Security No. & Commerce ID
John Cipolla BC573 2-5283 10041815

Inventor's Full Name: (Type) Signature Date Social Security No. & Commerce ID
Brian Jack Moore *Brian Jack Moore* 5/20/98 336-42-6399

Home Address: Street City State Country Zip Code
718 Bon Aire Drive Palatine IL USA 60067

Citizen of (i.e. U.S., Germany, etc.) Dept. No. Phone Mail drop & Post no. Employee Status
USA BD537 2-5266 IL27 AR3223

Inventor's Immediate Supervisor Dept. No. Phone Social Security No. & Commerce ID
Don Benkeser BD537 5-0137 316-54-3649

Inventor's Full Name: (Type)	Signature	Date	Social Security No. & Commerce ID		
John M. Sauer	<i>John M. Sauer</i>	<i>5/2/88</i>	312666792		
Home Address: Street 1066 Augustana Drive	City Naperville	State II	Country USA	Zip Code 60565	
Citizen of (i.e. U.S., Germany, etc.) USA	Dept. No. BC588	Phone 2-5707	Mail drop & Post no. IL-27	Employee Status	
<u>Permanent X Contractor</u>					
Inventor's Immediate Supervisor Bill Payne	Dept. No. BC279	Phone 5-5154	Social Security No. & Commerce ID 510-46-2151		
Inventor's Full Name: (Type) Stephen Lee Spear	Signature	Date	Social Security No. & Commerce ID 344-38-0983		
Home Address: Street 25 Williamsburg	City Skokie	State II	Country USA	Zip Code 60203	
Citizen of (i.e. U.S., Germany, etc.) USA	Dept. No. BC597	Phone 2-5251	Mail drop & Post no. AR3205	Employee Status	
<u>Permanent X Contractor</u>					
Inventor's Immediate Supervisor Jerry Campbell	Dept. No. BC597	Phone 2-2162	Social Security No. & Commerce ID 510-46-2151		
<hr/> <hr/> <hr/>					

DETERMINATION OF LEGAL INVENTORSHIP WILL BE MADE BY THE PATENT DEPARTMENT.

Inventor's signature (IMPORTANT - YOU MUST USE YOUR FULL NAME) - NO INITIALS--

11. Inventor's Full Name: Richard E. White Signature 05/20/99 Date 05/20/99 Social Security No. & Commerce ID 178-44-0863

Home Address: Street 980 Milford St City Cary State IL Country USA Zip Code 60013

Citizen of (i.e. U.S., Germany, etc.) USA Dept. No. BC279 Phone 5-0235 Mail drop & Post no. IL27 2A8 Employee Status

Inventor's Immediate Supervisor Bill Payne Dept. No. BC279 Phone 5-5155 Social Security No. & Commerce ID

Motorola Confidential Proprietary Upon Completion

Page 2-Disclosure No. Motorola Confidential Proprietary Upon Completion



Disclosure for Patent Committee

1. Name of the invention

Seamless High Integrity Radio Access Client Handoff in a Wireless Network

2. State the problem(s) solved by the invention

When a Mobile Termination device accesses the network requesting a desired service, a set of resources and path connections (Control and Bearer) are established within the Core and RAN network to support the requested service. This initial call configuration is assumed to be the optimum call configuration, given the state of the networks at the time of access. But, the dynamics of the RF environment along the mobility of the Mobile Terminating device, this initial call configuration may quickly become sub-optimum.

Functions within the RAN exist to optimize the RF paths. These RF path optimizations result in the establishment or removal of RAN based resources along with their associated control and bearer paths. As the Mobile Terminating device moves throughout the system, the crossing of RAN and CORE boundaries is inevitable. RAN boundary crossings are addressed within the Aerolon network via RAN to RAN interfaces. These interfaces allow Mobile Termination Device services to be provided across the boundaries. In general these interfaces allow for the allocation of BTS and RF resources along with a path for control messaging and bearer traffic delivery. But the support of calls across these interfaces may become sub-optimum over time. The control and bearer traffic paths may be over extended thus introducing unacceptable control latency and bearer traffic delays (including differential delays).

Typically, Radio Access Call Control and Bearer Path Management is centralized at a point within the RAN, referred to in general terms further as the RAN Session Client (RSC). (In particular to CDMA (Wide Band CDMA) the Selector Distribution Unit (SDU) and Radio Network Control Servers (RNCS) are instantiations of an RSC. Critical in maintaining an optimum call configuration is the location of the RSC. The RSC placement is critical, since the RSC serves as the termination point for the Core and BTS Bearer Path along with RAN Call Control. Locating the RSC to minimize bearer traffic delays and control latency is a crucial aspect of an optimum call configuration.

It is therefore beneficial from a Call Quality perspective to transfer the RSC from one physical point to another within the RAN Network.

Moving the physical location of the RSC is currently supported within some networks via intrusive manners. These procedures generally break and re-establish both Core and Radio connections, such as CDMA Hard Handoff. This not only impacts the quality of a given call but requires undesired interaction between the Core Network and MS on RAN boundary limitations. In addition, any modification to the Core and MS connections brings the potential for a failed connection.

Inventor Bill D. R. Date 5/10/99 Witness Tom D. Ken Date 20 May 99

Inventor Don Juan M. Date 5-10-99 Witness David W. G. L. S. Date 10 May 99

Inventor P. D. O. S. Date 5/10/99

R. J. L.
Patent Team

5/10/99

5/10/99

April 29, 1999

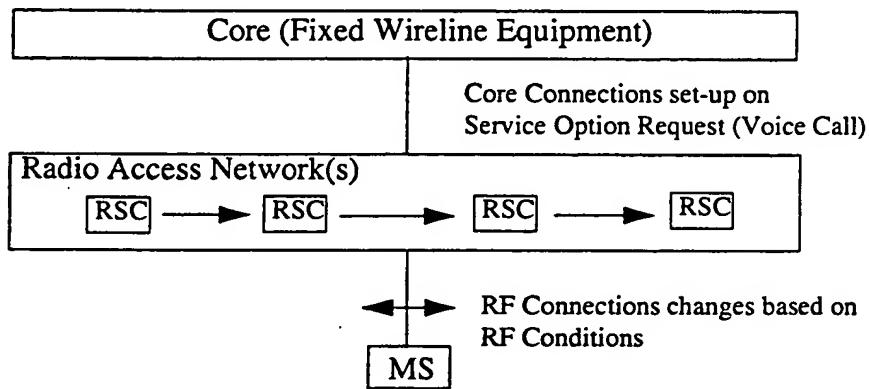
A method needs to be provided which provides a seamless RSC reallocation and which preserves the integrity of the call and connects.

3. Describe the invention, including its operation, purpose and environment.

The following invention specifies a method of moving the RSC within and across RANs in a seamless manner with high integrity. Figure 1, "Seamless RSC Handoff Illustration," on page 2 depicts the objective of this invention. The figure highlights the Fixed Equipment in the Core network and MS's connections unaffected by RSC reallocation within the Radio Access Network(s).

FIGURE 1.

Seamless RSC Handoff Illustration



In order provide for a seamless RSC handoff, two parallel paths from the BTS(s) and Core network are created. These connections involve two RSCs with the parallel paths supported via a RANS and Core "Y" bridging function. The "Y" bridging functions serve to provide for un-interrupted Bearer and Control for a given call session through an RSC handoff.

Figure 2, "System Bridging Functionality," on page 3 illustrates a Seamless High Integrity RSC handoff. The execution of such a procedure required the introduction of multiple bridging functions. The first bridging function, identified as the Core "Y" (a.k.a., Relay Client in Aerolon) provides a fixed termination point for fixed core based equipment (e.g., Circuit Gateway). Typically, these paths are formed at initial system access of the MSs. The Core "Y" provides bridging functions between the RSCs during the transitioning process. Further, the bridging function will allow for the integrity of the connection between the Core and new RSC prior to the bearer and control handoff within the RSC.

A RAN "Y" function is also required to shield the MS from the RSC transition. This RAN "Y" function supports the bridging and selection of control and bearer traffic from multiple RSCs. As with the Core "Y" functionality, the bridging function allows for the integrity check of the connections between the new RSC and BTS prior to the bearer and control handoff within the RSC. Typically, the multiple RAN "Y" connections will be established, since multiple BTSs are involved in a given call (CDMA Soft Handoff).

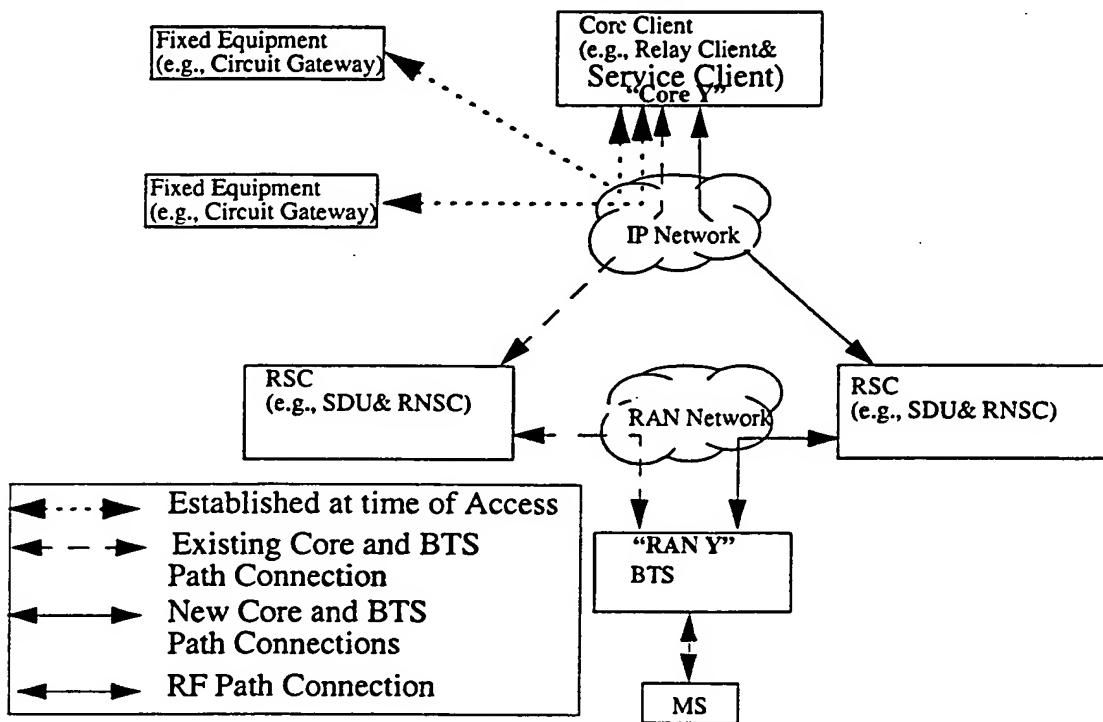
Inventor Will D. Lin Date 5/10/99 Witness Tom O. Lee Date 20. May -99
Inventor David J. Hwang Date 5-2-99 Witness David M. Cisneros Date 20 May 99
Inventor T.D. Lin Date 5/2/99
Ridge Lee 5/21/99
Sam Rose 5/20/99
Disclosure for Patent Committee April 29, 1999
Patent 5/20/99 Patent 5/21/99
John Deak 5/20/99 Patent 5/21/99

In most cases (e.g., CDMA), handing off of the RSCs involved the preservation of critical data of the Core and MSs. As an example, in a CDMA RSC handoff, the State of the MSs RF Layer 2 State information must be preserved. The relaying of this information between the two RSCs along with the coordination of the handoff would occur via either the Core "Y" or RAN "Y" function.

When all required information is obtained by the new RSC and Core and BTS paths are validated, the new RSC will take-over the control and bearer processing for the call. The old RSC connection will remain providing a graceful fallback in the case of a RSC handoff failure.

FIGURE 2.

System Bridging Functionality



The following set of illustrations depict the "Seamless High Integrity Radio Access Client Hand-off" in the context of CDMA.

Figure 3, "Intra-Core Streamline T=0," on page 5 illustrates a CDMA Call involved in an Inter-RAN soft handoff. CORE-1 and RAN-1 support the termination of the Core End-Points for a given Voice Call (Note multiple Core end-point may be involved). The Core network supports the Relay Client and the Service Client. Within RAN-1, the RNCS-1-1 supports the call control along with the selection function. The BTSs involved in the call are not contained within RAN-1 but are supported via bearer and control backhaul through the Inter-Vendor Soft Handoff (IV-SHO) inter-connect. At this time, a SDU/RNCS handoff (RSC Handoff) is desired.

Figure 4, "Intra-Core Streamline T=1-Establish RAN Connections," on page 6 illustrates the establishment of the SDU to BTS connection. An SDU is assigned in RAN-2 along with the BTS

Inventor William J. Rin Date 5/26/99 Witness James O. Lee Date 20. May. 99
 Inventor John J. Murphy Date 5-2-99 Witness John H. Welling Date 20. May. 99
 Inventor P. D. Clegg Date 5/2/99
B. M. J. Nease 5/20/99

connections to the current serving BTSs. This function requires the RAN "Y" in the BTS. Continuation of the procedure will not occur until the new SDU to BTS(s) path integrity is assured. RAN to RAN control communications are used to initiate and coordinate the new RAN configuration.

Figure 5, "Intra-Core Streamline T=2-Establish Core Connections," on page 7 illustrates the establishment of the Core Network. An interaction will take place between the Core networks to establish a Path to the new SDU. The Relay Client establishes a Core "Y" bridging functions allowing for the new SDU to verify its path connection integrity with the Relay Client. Continuation of the procedure will not occur until the new SDU to Relay Client path integrity is assured. At this time, the Core "Y" and RAN "Y" connections are established and the handing off of control and bearer management can be performed.

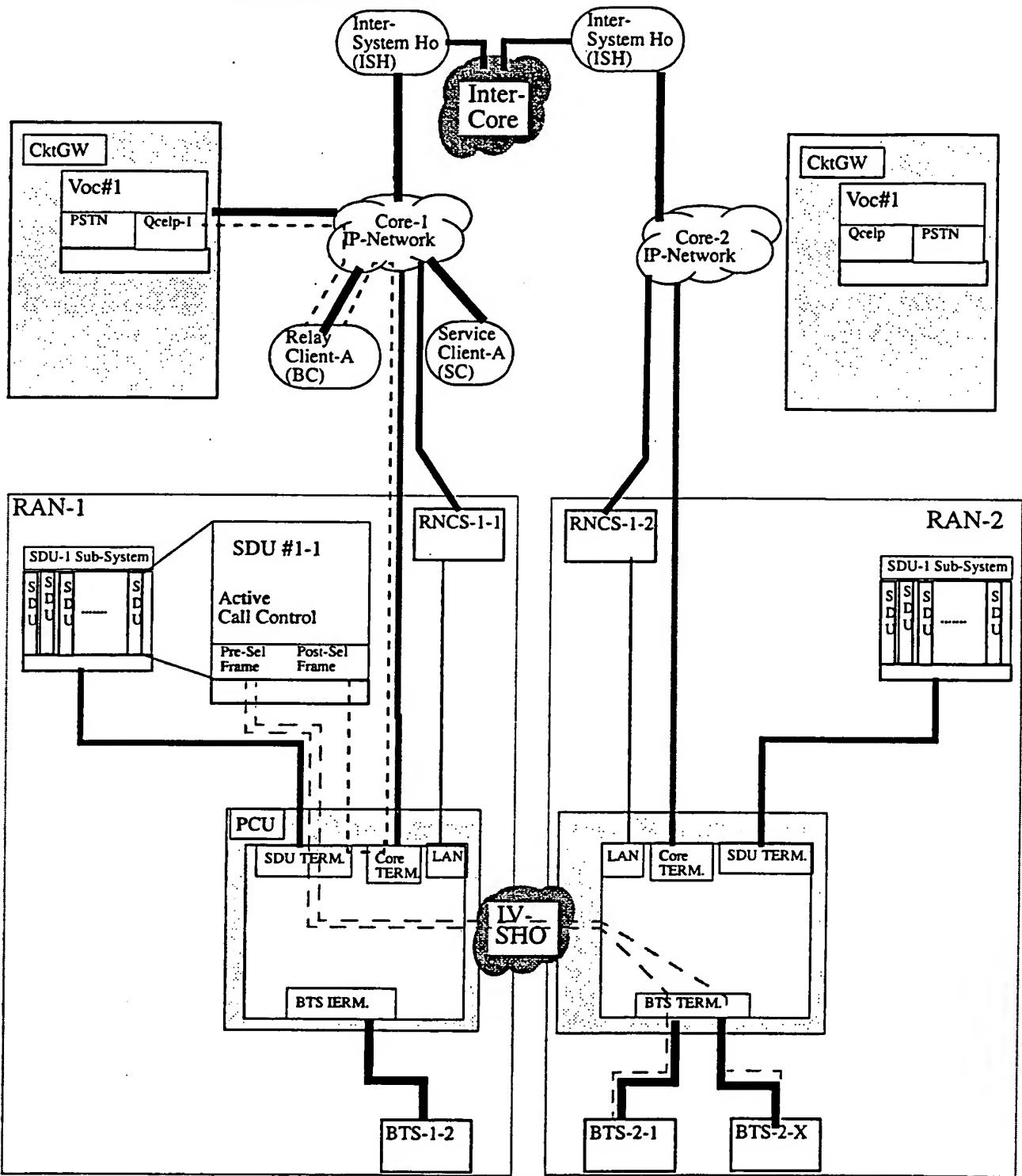
Figure 6, "Intra-Core Streamline T=3-Execute Handoffs," on page 8 illustrates the interaction between the RANs to obtain control information. It is expected to minimize latency that the required call data would be exchanged via the bearer path. The use of either the Core "Y" or RAN "Y" provides a channel between the two SDUs for control data exchange. Once the required data is obtained by the new SDU, the new SDU will take control of the call. The old SDU and its associated connections will remain as a fallback configuration.

Figure 7, "Intra-Core Streamline T=4-Tear-Down," on page 9 illustrates the teardown of the initial connections. This would be performed on the successful completion of the SDU handoff.

Inventor John D. Rice Date 5/10/99 Witness George J. Schenck Date 10-Nov-99
Inventor James M. Tamm Date 5-20-99 Witness Donald J. O'Neil Date 10-May-99
Inventor J.D. Rice Date 5/2/99
K. J. Kelly
B. W. J. Rice
5/4/99
5/20/99
Disclosure for Patent Committee April 29, 1999
John D. Rice 5/20/99 George J. Schenck 5/21/99
D. L. Schenck 5/20/99

FIGURE 3.

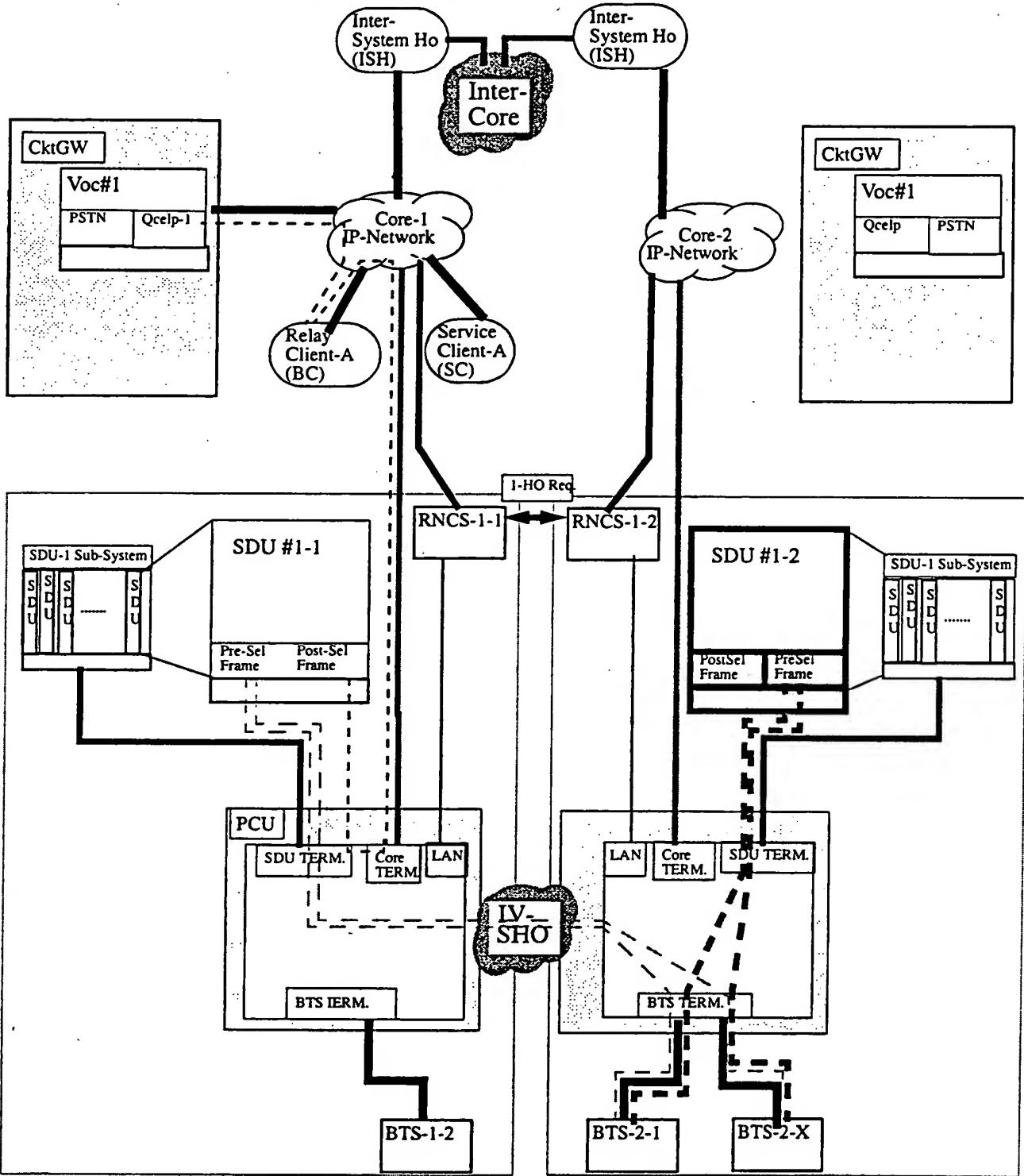
Intra-Core Streamline T=0



Inventor John S. E. Date 5/10/99 Witness James O'Brien Date 20. May. 99
 Inventor John S. E. Date 5/10/99 Witness James O'Brien Date 20. May. 99
 Inventor P. J. D. Date 5/21/99
John S. E. Date 5/21/99

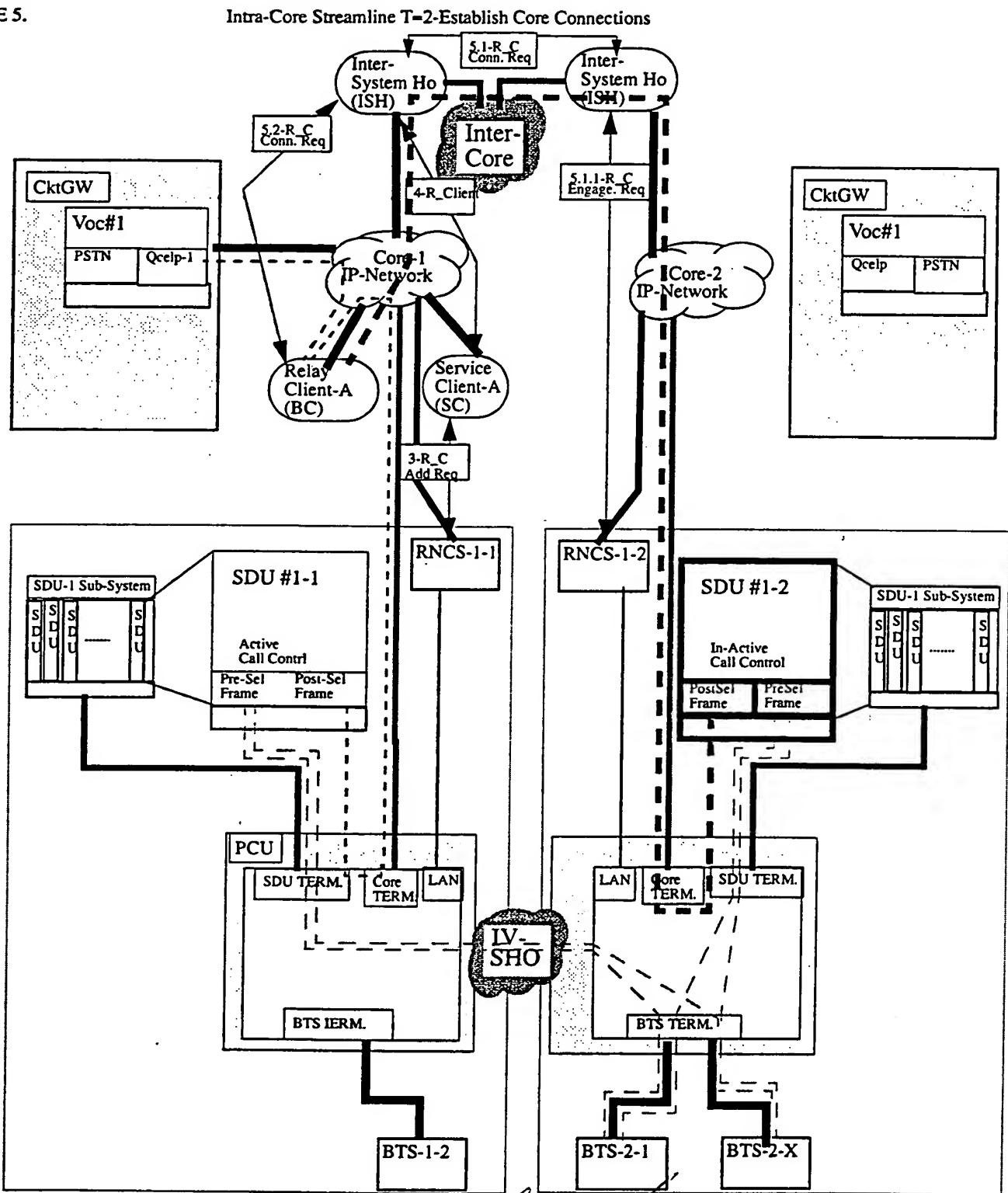
FIGURE 4.

Intra-Core Streamline T=1-Establish RAN Connections



Inventor A. H. S. R. Date 5/20/99 Witness Leng Lin Date 20-May-99
 Inventor Chen Jun Yu Date 5/20/99 Witness Vincent M. L. Chen Date 20-May-99
 Inventor T. J. D. S. Date 5/20/99
K. J. Jones
B. M. P. K. R.
 Date 5/20/99
 Date 5/20/99

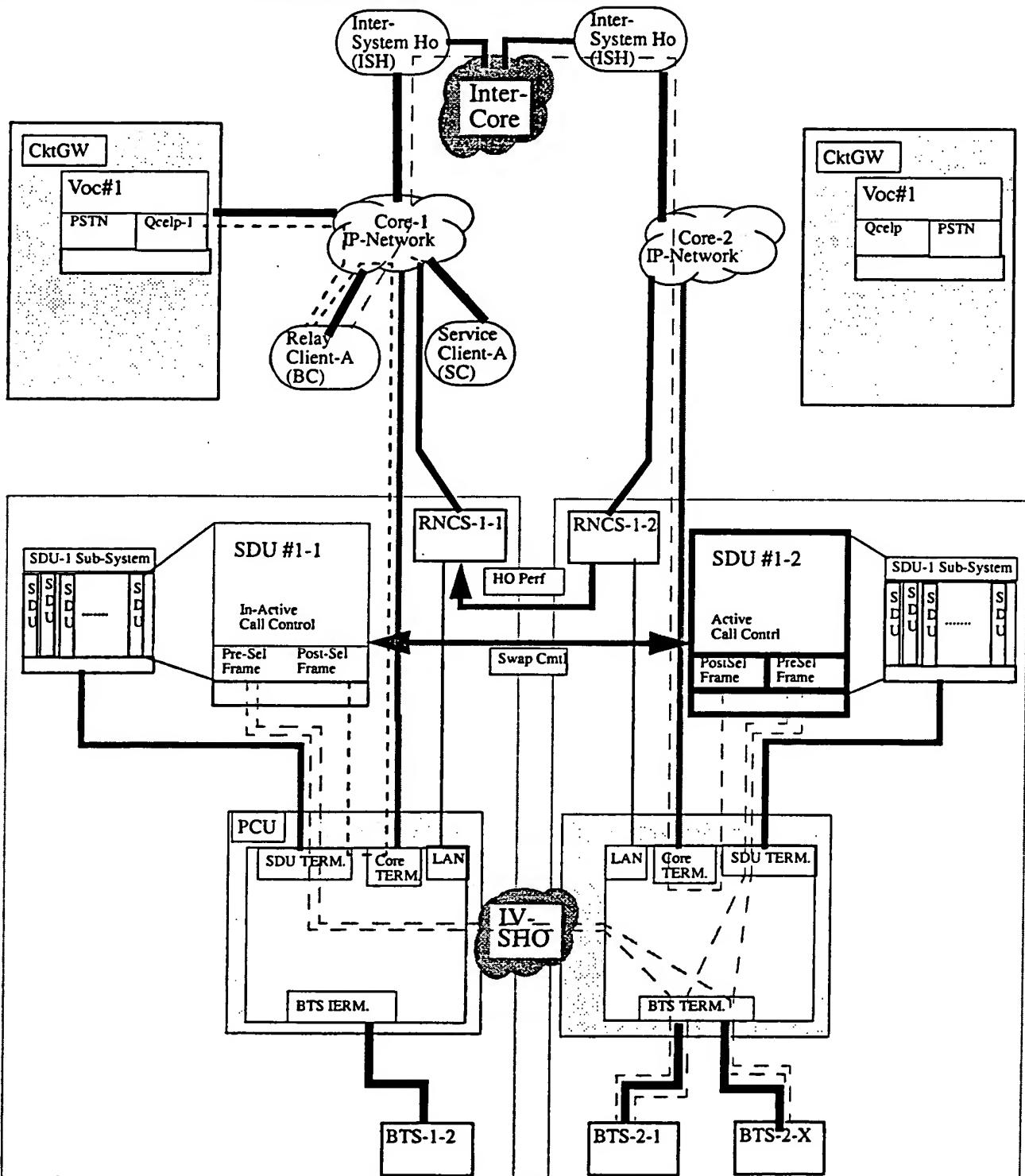
FIGURE 5.



Inventor John D. Ross Date 5/10/99 Witness Samuel J. Green Date 20. May - 99
 Inventor John D. Ross Date 5/10/99 Witness Donald J. Pausch Date 20. May - 99
 Inventor John D. Ross Date 5/20/99
John D. Ross
Brent Koenig
5/20/99
5/20/99

FIGURE 6.

Intra-Core Streamline T=3-Execute Handoffs



Inventor With Srin Date 5/21/99 Witness Leen Shee Date 20 May 99

Inventor Leen Shee Date 5/21/99 Witness Daniel J. Weller Date 20 May 99

Inventor P.D. O'G Date 5/21/99

S. Lee
Bruce P. Lee
5/21/99
5/20/99

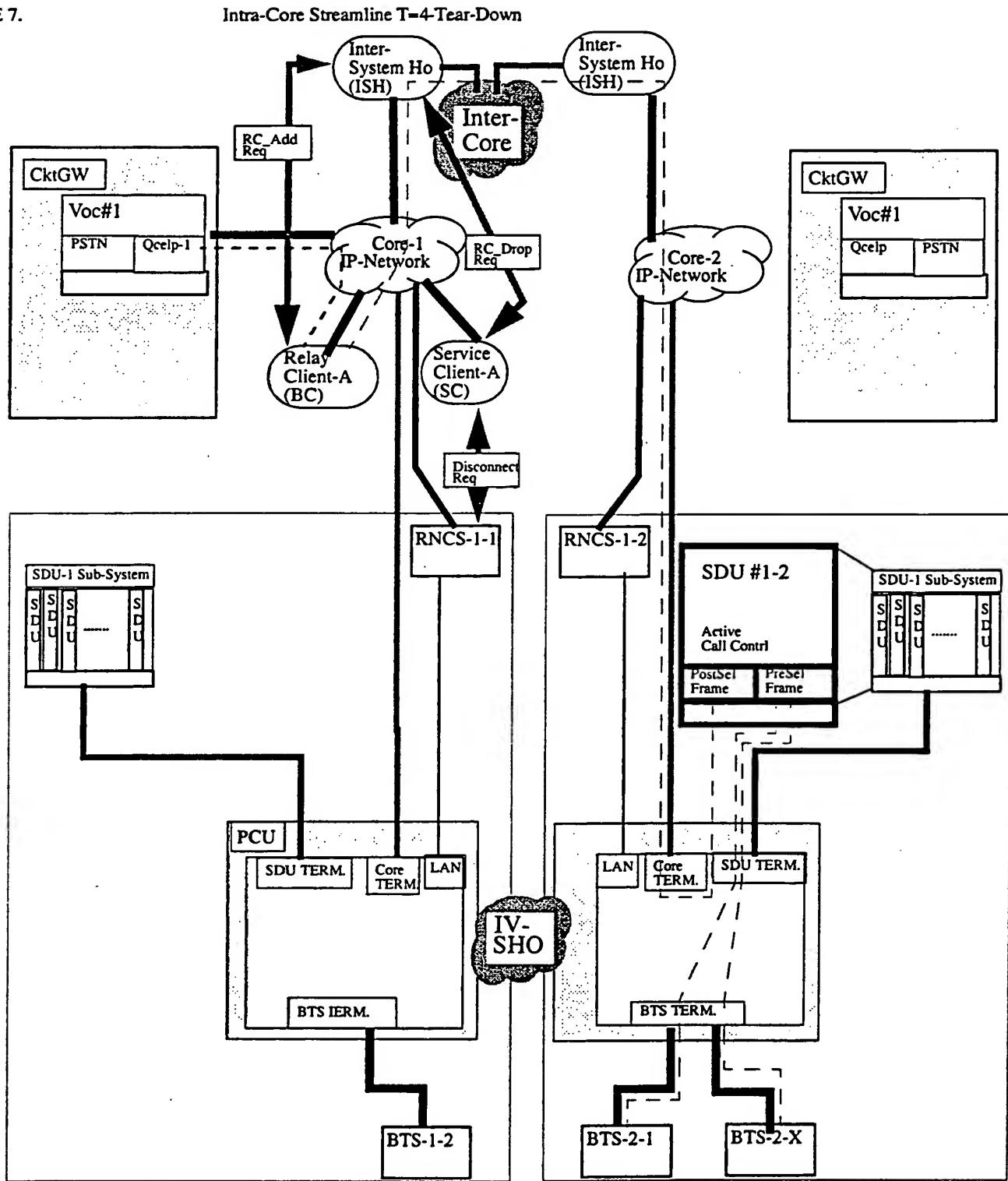
Disclosure for Patent Committee

April 29, 1999

5/20/99 George Galuszka 5/21/99

J. M. - President

FIGURE 7.



Inventor John D. Re Date 5/20/99 Witness Long D. Tran Date 20 May - 99
 Inventor Long D. Tran Date 5/20/99 Witness David W. L. Lin Date 20 May - 99
 Inventor T. J. O'Leary Date 5/20/99
Robert J. Kuehl
James P. Murphy
5/20/99
5/20/99
 Disclosure for Patent Committee
 April 29, 1999
5/20/99
Jagan Prabhakar S/21/99

4. List the closest known technology (attach article, patent, catalog sheet or other documentation).

Three Party Conference based applications.

Inter-System Soft handoff connectivity disclosures.

5. Improvement(s) over known technology.

Current methods for performing moves to new RAN components are intrusive to the Core and Mobile Station. These are usually performed in a manner where Core and Radio connections must be broken and then re-established. In many cases, the integrity of the new connections is unknown until primary control and bearer traffic is relinquished to the new RAN components. While the original connections remain for procedure failure reasons, the fallback to these connections are typically slow thus degrading the call quality. Through the disclosed method, in particular the introduction of the Core "Y" and RAN "Y" functions, the Core fixed based components and RF connections are unchanged (e.g., No CDMA Hard Handoff) through the movement to new RAN based components. The method allows for an integrity check prior to relinquishing control to the new components thus preserving the call quality through the component handoff.

6. What new elements (e.g. components, circuits, process steps) or combination of known elements or software algorithm produced the improvement?

The invention introduces a set of key functional elements, enabled by the Aerolon network architecture, which used in combination provide for the seamless high integrity handoff of RAN based components.

- Introduction of a Relay Client (Core or RAN based) which serves as the Core "Y" function. Enabling the termination and selection of multiple RAN bearer paths.
- Introduction of a RAN "Y" function which provides the BTS to support multiple bearer and control paths to SDUs (RSCs).
- Selective Connection integrity checks within the Core "Y" and RAN "Y" functions allowing for path integrity validation prior to activation of control and bearer swap.
- SDU to SDU connections via either Core "Y" or RAN "Y" to forward critical dynamic call configuration and state (e.g., RF Layer 2 State, High Speed Data State: PCF, RLP and Bearer Client State) and coordination of the relinquishing of call control and bearer traffic processing.

Inventor W.H. Srin Date 5/20/99 Witness Lam Olen Date 20 May 99
Inventor John M. T. Date 5/20/99 Witness D. Michael Date 20 May 99
Inventor T. D. K. Date 5/20/99
R. J. P.
B. B. P.
Date 5/20/99
Disclosure for Patent Committee April 29, 1999
10
S140199 Joseph M. Polycarpe 5/21/99
John T. John T. Joseph M. Polycarpe 5/21/99